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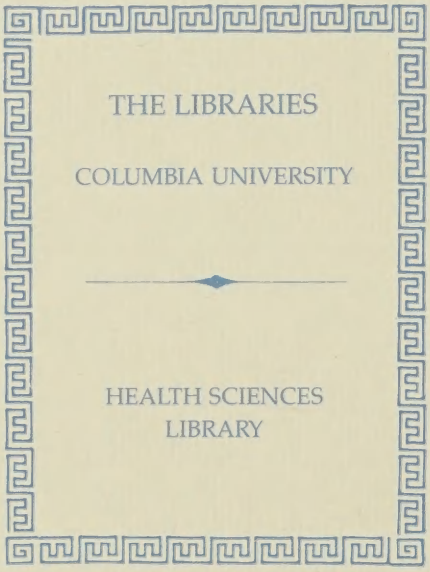
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STETHOSCOPE

NEWS OF COLUMBIA-PRESBYTERIAN MEDICAL CENTER

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RE-INVENTING THE MEDICAL CENTER

SAVING THE SMALLEST LIVES
CHILDHOOD LEUKEMIA: CANCER SUCCESS STORY
TRANSPORTING HIGH RISK MOTHERS

STETHOSCOPE

JANUARY 1982
VOLUME XXXVII Nº 1

A BIMONTHLY PUBLICATION
OF PRESBYTERIAN HOSPITAL

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IMPORTANT NOTICE TO OUR READERS

Due to the constantly increasing cost of printing and mailing STETHOSCOPE, the publication now will be offered to our subscribers on a bimonthly basis instead of ten times per year. In addition, as a rule, only donors to The Presbyterian Hospital will be retained on our subscription list.

In 1982, our lists of University alumni will be returned to Columbia to assure that all P&S, DOS and Nursing alumni will continue to be informed about news of the Medical Center through their respective alumni publications. Any readers whose subscriptions are cancelled in error should write to the Public Interest Department, Presbyterian Hospital, 622 West 168th Street, New York, N.Y. 10032, to explain why their names should be restored to our mailing list. We apologize in advance for any inconvenience this change in policy may cause you, and we hope those of you who continue to receive STETHOSCOPE enjoy our "new look."

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ON THE COVER *Dave Ginsberg, Director of PH's Office of Planning, points to the advantages of a Medical Center in which the needs of both Hospital and University would be functionally integrated. The contemplated changes will constitute the first major transformation of the Columbia-Presbyterian Medical Center since it was established in Washington Heights/Inwood fifty-three years ago. The concepts guiding this transformation are expected to serve as a model for the organization of other medical institutions around the world.*

RE-INVENTING THE MEDICAL CENTER

One day a few years from now two photographs will be fixed side by side in an album. One picture, a bit brown, its ends curling, will show a group of men and women standing in front of Presbyterian Hospital in 1928. The second picture, glossy and still fresh from the darkroom, will show a similar group in front of a building which is now only contemplated.

The pictures will bare one fundamental element in common: each group will represent a new vision—an evolutionary leap in the concept of what a medical center should be.

When Edward S. Harkness, Dean Sage, Dr. Clarence Charles Burlingame, and others proudly toured the buildings of the new Columbia-Presbyterian Medical Center they were looking not just at so much concrete and office space, and not just at a relocation project which involved transferring Presbyterian Hospital from its original location on the East Side to its present location in Washington Heights; they were looking at a conceptual hybrid: the union of an educational and research institution with a major clinical care facility.

Today, fifty-three years later, the groundwork for a significant transformation is taking place once again at CPMC. Faced with infinitely more complex operational demands than it was originally designed to handle, but guided by imaginative leaders, the Medical Center is, for the second time in its history, facing a metamorphosis of body and soul.

THE LONG RANGE PLANNING COMMITTEE

Roughly speaking, the conceptual process of re-inventing the Medical Center began in October 1980 with the organization of a Long Range Planning Committee. Symbolically, the Committee was co-chaired by Mr. Edward H. Noroian, executive vice president of Presbyterian Hospital, and Dr. Donald F. Tapley, dean of the College of Physicians and Surgeons. The Committee, which included medical, faculty and administration representatives from Presbyterian Hospital and the Columbia University Health Sciences Division, met in March 1981 at Arden House to draft a "Goals and Missions Statement" for the Medical Center. Not since the days of its founding had CPMC been the subject of so sweeping a re-evaluation.

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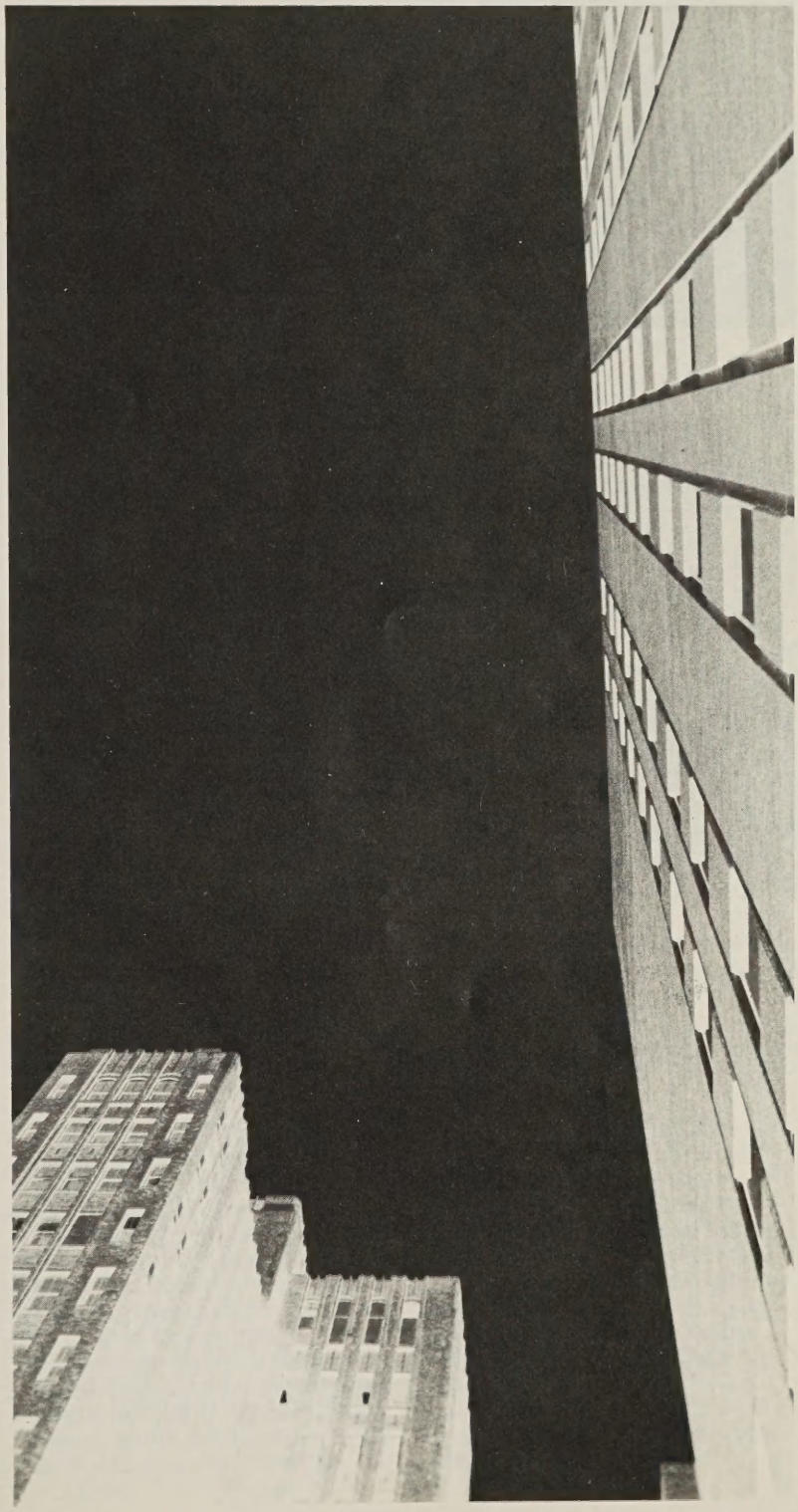

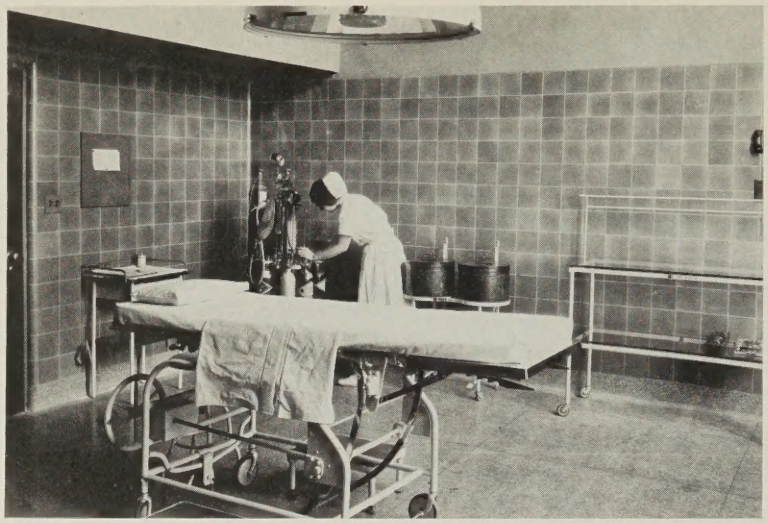

When PH's operating rooms were first built (above) there was more than enough space for doctors to maneuver. Today (below), O.R.s are cramped by large amounts of equipment.

GOALS AND MISSIONS

At the core of the ground-breaking document was an ambitious idea: The Medical Center's goal should be not just excellence in patient care, not just excellence in teaching or research, but excellence in all three.

The document also made an assertion few other medical centers have put on paper; the Medical Center will "exercise a leadership role in assessing needs, determining alternatives and providing services where appropriate (for the community)."

In addition, the Goals and Missions Statement suggested that operational and programmatic decisions in the areas of resource management, patient care and education be made on the basis of enhanced cooperation between the Hospital and the College.

Further, the Statement recommended that the amount of space allotted to patient care be determined by a "new functional system which incorporates not only education, but also research and institutional clinical responsibilities."

But most important, these goals added up to a dynamic image: the image of a new Medical Center—a Medical Center in which the physical facilities of Hospital and University, fragmented by over fifty years of expansion, would be brought together to form a functionally integrated structure.

MASTER PLAN FOR MEDICAL CENTER

In determining the need for a new Medical Center, the Long Range Planning Committee called for a Master Plan—a comprehensive development program for reconstruction of the Medical Center.

The Master Plan, currently under review by state health authorities, calls for the replacement of some existing PH facilities with a view toward substantially increasing the total amount of space available, as well as improving physical environment, operating efficiency and overall land use.

A major feature of the multi-million dollar project would be a new inpatient facility located on a yet-to-be finalized spot at the present site. This new structure would consolidate space now allotted for medical, ancillary, administrative and service uses. The result will be enormously enhanced efficiency and more money available for direct patient care and new services.

THE NEED TO REBUILD

Before opting for a major construction effort, CPMC seriously considered relying totally upon renovation of existing facilities. Insurmountable physical

obstacles, however, precluded this solution.

Many barriers to renovation are built into the physical plant: for instance, the highly fragmented facilities that evolved over the past five decades – sixty-five nursing units, eight operating suites, six ICU's, eight X-ray departments – would make consolidation nearly impossible.

PRIORITY PROJECTS

While the Master Plan is under review, an interim renovation program known as the Priority Projects will eliminate some of the most pressing problems (but for the short term only). Part of the task of the Priority Projects program has been to ensure that Presbyterian Hospital becomes "code-compliant" by implementing changes such as installation of sprinklers and conversion of wards to semi-private rooms.

A COMMITMENT TO COMMUNITY

Re-inventing the Medical Center has not been left solely to planners, architects and representatives of the Hospital and University.

From the start, the Long Range Planning Committee recognized the need for community input in formulating programs and re-defining the role of the Medical Center. Presbyterian Hospital has put this commitment to the test by sponsoring community conferences in which local residents had the opportunity to help define the need for services in Washington-Heights-Inwood, and by maintaining the closest ties with elected officials, community leaders and representatives of the larger community it serves.

In the Spring of 1982, pending state approval, the Columbia-Presbyterian Medical Center hopes to develop a program that will embody the concepts adopted in its pioneering Goals and Missions Statement. The rebirth of the Medical Center will follow.

Before opting for a major construction effort, CPMC considered relying totally on renovation. Insurmountable physical obstacles, however, precluded this solution.

THROUGH THE HISTORIAN'S EYE

"In October of 1872, a small group of New York philanthropists and doctors proudly stood by as James Lenox opened Presbyterian Hospital at 70th Street and Park Avenue. At the time, the Hospital was considered the most modern structure of its kind. Some thirty-six beds were ready for ward patients. A professional staff of twenty-one physicians and surgeons had been organized to provide the best of medical care 'for the poor of New York, without regard to race, creed, or color.'

"In recent years, standing in one of the wards or classrooms of the Columbia-Presbyterian Medical Center, I have often speculated about how utterly amazed the founders and first doctors would have been if they could have foreseen the future of their Hospital."

– Albert R. Lamb, M.D., Medical Center Historian, 1955.

SAVING THE SMALLEST LIVES

An infant receives artificial ventilation in PH's Neonatal ICU.

When Sandra was born she was so small that a lady's handkerchief could almost completely cover her. Although at high risk, Sandra was in good hands. Her mother had been rushed to Presbyterian Hospital a few weeks earlier where she had received special medications to stop contractions so that the period of intrauterine growth could be prolonged.

When labor commenced, Sandra's mother was monitored around the clock by a team of specialized nurses and doctors and by a unique computer system programmed with information based upon hundreds of previous cases, and capable of analyzing many vital functions in both mother and fetus.

Highly sophisticated tests allowed doctors to determine the concentrations of various gases in Sandra's blood. When test results revealed high acidity—an indication that the fetus was receiving insufficient oxygen — a Cesarean section was performed. Within seconds of birth Sandra was raced into a transitional intensive care unit, one of the first such units in the United States to be located on a delivery floor.

Weighing only two pounds, four ounces, Sandra was one of the smallest of the five-hundred or more premies delivered at PH each year, and her health problems were similar to those of countless other low birthweight infants.

Because doctors already knew that Sandra did not have sufficient oxygen in her blood, an oxygen tube was quickly inserted through her mouth and to her lungs. Blood pressure was monitored and body temperature, an important factor in regulating metabolism, was controlled.

Once her condition had stabilized, Sandra was wheeled down a series of corridors and placed in a softly lit room where she joined at least a dozen other infants, each enclosed in the constantly monitored environment of its own incubator.

Sandra spent the first two months of her life in PH's Neonatal Intensive Care Unit. Her weight and health improved steadily as a result of a combination of factors ranging from specially tailored intravenous feeding to on-the-spot blood gas analysis—factors which ultimately allowed her to graduate to the care of her parents, a normal baby girl.

Sandra really was lucky. As recently as 1972, only twenty-nine percent of premature infants weighing between 1000 and 1500 grams (1000 grams equals 2.2 pounds) survived. Today, at Presbyterian Hospital, that figure has reached 93 percent and is still improving.

TINY INFANTS—MAJOR PROBLEMS

Of the millions of babies born each year in the U.S., about nine percent are premature, or weigh under five pounds.

The leading causes of death among these tiny infants—hemorrhages in the brain, respiratory distress syndrome, and infections—stem from the fact that many systems in the premature baby are not totally prepared to function. Capillaries rupture, for instance, because they cannot withstand surges in blood pressure; lungs are unable to expand normally; and the skin itself may be so thin that it can barely protect against infection.

The dramatic decline in mortality and morbidity among these infants at Presbyterian Hospital over the last two decades is largely the result of a concerted effort to understand and counteract these phenomena.

PINPOINTING THE ROLE OF BLOOD GASES

When Dr. Stanley James, now director of the Division of Perinatology, came to PH in 1955, little was known about the special problems of premature infants. One general misconception was that the fetus' normal environment was low in oxygen. Besides slapping the infant on the rear at birth, doctors did little to encourage breathing.

But Dr. James' studies showed that low oxygen levels were limited only to the period of labor and delivery and

ABOVE: Dr. Jen Wung, anesthesiologist in charge of inhalation therapy, with nasal CPAP (constant positive alviolar pressure) device which he developed. The device is helping to save young lives.

BELOW: Dr. Stanley James (left) director of the Division of Perinatology, and Dr. John Driscoll, clinical director, neonatal ICU. Over the last nine years they spearheaded an increase in the survival rate of PH's premies from 29 percent to 93 percent.

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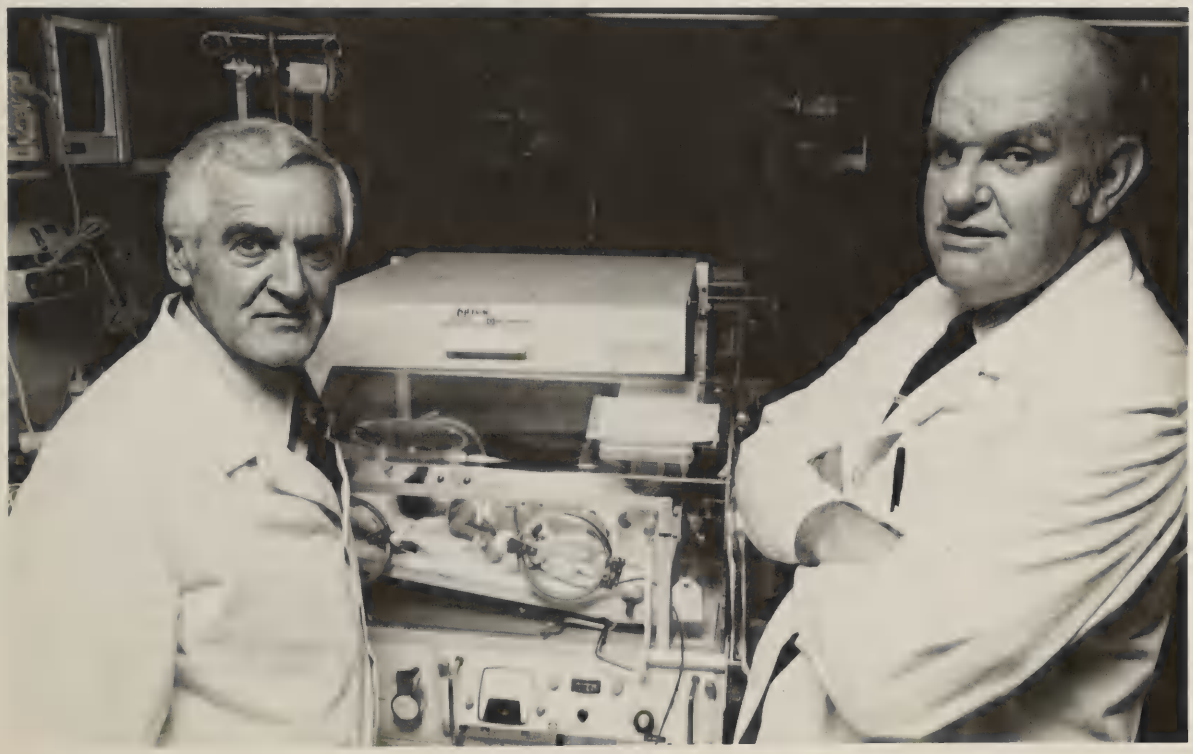


ABOVE: Dr. Stanley James with transcutaneous oxygen monitoring device. Presbyterian Hospital was the first hospital in the United States to use the device which permits constant monitoring of blood oxygen content.

BELOW: Children who are born prematurely receive regular psychological and neurological examinations for several years as part of PH's "Follow-up Program."

were not part of the normal fetal state. "We established a relationship between hypoxia (low oxygen content in the blood) and heart rate changes, and we showed that complications that might lead to cerebral damage could be generally reduced if resuscitation were immediately initiated at birth," says Dr. James.

At the same time, Dr. James and colleagues showed that low oxygen levels were accompanied by a high level of carbon dioxide (acidosis) in fetal blood. "Excessive acidity can lead to reduced heart and kidney function, and can also cause chemical changes in the brain," explains Dr. Karl Schulze, assistant attending pediatrician at PH.

To monitor the levels of these gases (oxygen and carbon dioxide), Dr. James developed methods for catheterizing the umbilical vessels of the infant following delivery.

James' studies also revealed that acid levels are influenced by temperature, and this finding led to the introduction of the first warming device for newborn infants in the delivery room.

Other important advances in neonatal care followed. Mechanical life-support devices for artificial ventilation were introduced in the mid-Sixties. A micro technique for rapid blood gas analysis, developed in Denmark, was first introduced in the U.S. at Presbyterian Hospital. PH was also the first hospital in this country to use a transcutaneous (through the skin) oxygen monitoring device developed in Germany. By the mid to late Sixties many advances were being coordinated, and led to the development of newborn intensive care units.

Premature infants were meanwhile benefiting from developments in parenteral (non-oral) feeding. Dr. John Driscoll, clinical director of PH's Neonatal ICU, and Dr. William Heird, a nutritionist, were among the first to be involved in intravenous feeding of premature babies. Intravenous nutrition is often essential to the survival of these infants because their digestive systems may be unable to process foods.

TECHNICAL REFINEMENTS AND SPECIALIZED CARE: A WINNING COMBINATION

But mortality and morbidity rates did not begin their steep decline until well into the 1970's. In the late Sixties, for instance, when PH opened its Division of Inhalation Therapy, techniques were primitive by today's standards. "It took us ten years to become expert at artificial ventilation," remarks Dr. James, adding, "The difficulty of the technique is inversely proportional to the size of the child. We are particularly in debt to Assistant Attending Anesthesiologist Dr. Jen Wung who made many of our advances possible."

One of the most important contributions, both in terms of infant survival and quality of life, was the opening of PH's Transitional Care Nursery. Located within steps of the delivery room, the Nursery's treatment facilities saved precious minutes during which infants might otherwise have expired or suffered brain damage.

Another vital element was the introduction of a micro-biochemical laboratory, the first such facility in the U.S. to be located next to a neonatal ICU. Administrative Nurse Clinician in charge of the ICU'S babies, Kiyoko Loizzo, points out, for instance, that the Lab's automated equipment can process fifteen to twenty blood samples per hour to check levels of blood gases. "This gives us up-to-the-minute feedback on how our babies are doing," she says. "It allows us to alter therapy practically as soon as a problem arises."

But more than anything else, success for PH's premies is dependent upon seventy nurses, a dedicated pediatric house staff, highly trained neonatal fellows, and thirty specialists in neonatology, obstetrics, anesthesiology and nutrition. Over the last ten years a developing appreciation for the interrelationship of these fields now known collectively as perinatology has contributed significantly to the premie's chances of survival.

QUALITY OF LIFE – WHERE PARENTS COME IN

The combination of technical refinements and specialized care has brought about not only a very considerable improvement in the survival rate of low birth-weight babies, but a vast improvement in quality of life. Dr. James points out, for instance, that in the mid-Fifties, up to seventy percent of the premies that did survive suffered from cerebral palsy, blindness or mental retardation. That figure is now down to sixteen percent and still declining.

Quality of life for PH's premies is the focus of a follow-up program led by Drs. John and Yvonne Driscoll. Children who are born prematurely receive regular psychological and neurological evaluations for several years. If problems are identified, corrective measures can be implemented quickly.

Parents too are seen as a vital element in assuring quality of life for premature infants. Says Dr. Fred Bomback, a pediatrician, "In the past, parents weren't even allowed to touch a premature infant. We used to think only of survival. Today we also consider the survival of the parent-child relationship as one of the most important results of our work."

TRANSPORTING HIGH-RISK MOTHERS

A young mother-to-be is checked out by perinatal specialists after being rushed to Presbyterian Hospital's "high risk" obstetrical unit from an affiliated hospital.

For years, specially equipped mobile intensive care units have been rushing critically ill newborns to Presbyterian Hospital from delivery rooms and intensive care units throughout the Tri-State area.

Increasingly, however, Presbyterian has been sending teams of specially trained doctors and nurses to participating hospitals to bring back "high risk" pregnant women before they give birth. Often critically ill themselves, these mothers-to-be are in the best possible position to survive the difficult weeks and months ahead once they arrive at the Hospital's "high risk" obstetrical unit.

Explains Dr. Raymond Vande Wiele, director of Obstetrics and Gynecology at Presbyterian Hospital, "For years, we worked to perfect life-sustaining equipment so that we could safely transport these tiny, fragile human beings to our special newborn intensive care unit. Now we know that the womb is the best incubator."

Dr. Harold E. Fox, an obstetrician/gynecologist and subspecialist in maternal-fetal medicine, is director of Presbyterian Hospital's Regional Perinatal Network, the program that coordinates both infant and maternal transports. Dr. Fox notes that regionalization and cooperation among the Network's affiliated hospitals have made it feasible for Presbyterian to assemble a team of highly specialized perinatologists, providing the most advanced treatment for seriously ill newborns, as well as their mothers.

"No single hospital, working independently, could justify the concentration of resources available to pregnant women and newborns that the Network provides," explains Dr. Fox. "By pooling resources and by acting as a referral center Presbyterian has been able to provide a level of service unsurpassed anywhere else."

Hospitals participating in the Network are: St. Lukes-Roosevelt, Harlem, Overlook, Good Samaritan, Northern Westchester, Keller Army, and Morristown, among others.

IMPROVED TECHNOLOGY ENABLES DOCTORS TO FEED INFANTS WHO ARE UNABLE TO EAT

Infants receiving intravenous nutrition are meticulously monitored for signs of infection by perinatal specialists such as (from left) Dr. Joseph Levy, Beth Heller, R.N., Dr. Deborah Loeff and Dr. William C. Heird.

When three week old Lisa was rushed to the Babies Hospital Unit of Presbyterian Hospital suffering from chronic diarrhea–a life-threatening condition in infants with no specifically known cause–her condition had already led to dehydration, malnutrition, and a steady loss in weight.

Yet, as frail as she seemed, Lisa had excellent chances for survival. Thanks to total parenteral nutrition (TPN), an intravenous technique developed in 1967 by Dr. Stanley J. Dudrick, a University of Pennsylvania surgeon, and colleagues at Presbyterian Hospital, Lisa and at least ninety percent of infants like her can now go on to lead healthy lives. Only a little over a decade ago Lisa's chances for recovery would have been less than ten percent.

"TPN has revolutionized pediatric nutritional care," says Dr. William C. Heird, a nutrition specialist in the Division of Metabolism and Nutrition. "Without the technique, thousands of infants would have died from genetic, metabolic or surgical complications that ruled out oral nourishment."

Total parenteral nutrition is designed to provide the body with the same concentration of nutrients that would result from normal digestion—not an easy task considering the large number of chemical reactions involved every time a food substance passes through the gastrointestinal tract.

The mixture that enters an infant's circulatory system includes amino acids; glucose; fat; electrolytes such as sodium and potassium; minerals such as calcium, magnesium and phosphorus; trace elements such as zinc and copper; and vitamins.

"The concentration of each ingredient is central to the success of TPN," says Dr. Sudha Kashyap, a fellow in neonatology. She explains that the quantity of each ingredient in the mixture is tailored to the infant's weight. "For instance," she says, "too little glucose per kilogram can bring on hypoglycemia and this can lead to convulsions, a reduced level of oxygen in the brain, and ultimately, brain damage." She says that imbalances in other ingredients can precipitate similarly dangerous consequences. To insure that concentrations are kept normal, the infant receives daily blood tests, and any changes in levels are quickly counteracted.

Maintaining the proper balance of nutrients isn't the only critical aspect of TPN. Infection too is a threat. To minimize the risk of infection, the catheter, with its life-sustaining mixture, is introduced beneath the patient's scalp and manuevered subcutaneously until it is joined to the jugular vein. "We want to keep the point of entry to the body as far as possible from the point of entry to the circulatory system," explains Dr. Heird. "This technique, as well as meticulous care of the catheter exit site, greatly reduces the chances of local infection spreading to the circulatory system."

CHILDHOOD LEUKEMIA: CANCER SUCCESS STORY

Gabrielle Peter in her fifth grade classroom. On her fourth birthday she was diagnosed as having acute lymphoblastic leukemia.

Although she was only four years old, Gaby was scared. During the past few months she had seriously injured several bones as a result of minor falls. She and her mother, Ursula Peter, knew that something was seriously wrong. On an icy January day—it was Gaby's fourth birthday—doctors at the Babies Hospital Unit of Presbyterian Hospital looked over the results of a bone marrow test and diagnosed Gaby's condition as leukemia.

"I felt like screaming," recalls Mrs. Peter. "But in a way I also felt relieved. For a long time I had known there was a problem; the diagnosis, although a shock, gave us something concrete to deal with. We knew that we could get started on treatment and that Gaby would have a fighting chance."

Most forms of childhood leukemia will result in death within eight months if untreated. In Gaby's case many precious weeks already had been lost. Her doctor, Associate Attending Pediatrician in the Hematology/Oncology Division, Anneliese Sitarz, wasted no time. During the following six-week period Gaby received one month of intensive chemotherapy followed by daily radiotherapy (a treatment designed to knock out the fast-growing leukemic cells). By March, although weakened as a result of treatment, Gaby was well enough to return to school.

Three years of chemotherapy followed. During that period Gaby (her full name is Gabrielle) returned to Presbyterian first once a month, then once every other month, then once every three months for treatment or checkups. Regular bone marrow tests continued to reveal no leukemic cells, and when Gaby was seven years old she was taken off all medication.

That was three-and-a-half years ago. Today, at age 10, Gaby is a lovely, intelligent and healthy fifth grader.

A THIRTY YEAR HISTORY OF PROGRESS

Gaby's illness, acute lymphoblastic leukemia, is the most common form of

Gabrielle with Dr. Anneliese Sitarz. They met six years ago, when Gabrielle was four years old.

childhood cancer. Striking one child in about every three-thousand children under fifteen, the illness accounts for one-third of all childhood cancers.

"In 1950 lymphoblastic leukemia was nearly one-hundred percent fatal," says Dr. Sergio Piomelli, director of PH's Hematology-Oncology Division at Babies Hospital. "But," he explains, "this form of leukemia, along with many other forms of childhood cancer, has been shown to be highly susceptible to chemotherapy. Today the cure rate is approaching seventy-five percent."

Chemotherapy has been used in leukemia treatment since 1949. Current successful treatment is based on the initial use of three agents: a hormone derived from cortisone which kills leukemia cells; a plant-derived drug which prevents abnormal cells from duplicating, and an enzyme called L-asparaginase which deprives abnormal cells of the amino acid asparagine, a substance vital to their growth.

"The combination of these agents," says Dr. Piomelli, "results in eradication of 99 percent of the disease within just a few weeks. But it takes two to three years of additional therapy to remove the last one percent."

LEUKEMIA—A PERSONAL PERSPECTIVE

How do young patients and their families react to a diagnosis as serious as leukemia, as well as to years of uncertainty and rigid medical treatment? For Gabrielle and her parents an initial sense of desperation was rapidly replaced by a feeling of hopefulness.

"At first you feel like an outcast," says Mrs. Peter. "But then you find out that others have survived this disease. You meet other parents and you see children in remission and then you see that there is real hope."

Mrs. Peter offers this advice to other parents of leukemic children: "Talk to your children. Answer their questions. Build trust. Build as normal a life as possible. Never lose hope."

But there were many times in the course of Gaby's treatment when hope may have been stretched to its limit. Chemotherapy seemed to weaken Gaby's resistance to other illnesses. She had many colds and sore throats. Then she had chicken pox, a serious disease for chemotherapy patients because the pox can creep into internal organs. In Gaby's case the pox spread to her lungs before she finally got better.

And perhaps because of an immune system weakened from years of chemotherapy, Gaby caught meningitis a few months after her treatments had stopped. She was in the hospital for a month, and for forty-eight hours in a coma.

The road to recovery was long. But Gabrielle and her family always kept hope in sight. "I was always sure I'd live," says Gaby. Adds her mother, "Gaby was always willing to pull through. She had a real sense of survival. She never fought the medications or the needles."

"Gaby's chances for leading a full, normal life are excellent," says Dr. Sitarz, who treated the little girl for years and continues to stay in touch with the family. Mrs. Peter adds a salient image: "A few months ago we went on a skiing trip. For a long time I watched Gabrielle coming down the slope. Her speed and control were excellent. And I thought to myself, five years ago I wouldn't have believed I ever could have had this experience."

Clinical Research: Renewed Emphasis at CPMC

Clinical research, teaching and patient care form a triad of interrelated activities essential to the excellence of a great medical center. As a result of a renewed five-year grant for seven million dollars from the National Institutes of Health, the Columbia-Presbyterian Medical Center has been able to reaffirm its commitment to outstanding clinical research.

CPMC's General Clinical Research Center is acknowledged to be among the top centers in the U.S. Over the last five years it has scored significant advances in research related to diseases of bone, dermatology, cardiology, neurology, pediatric nutrition and hematology, to name just a few.

The Center's success is linked to the very close cooperation between Presbyterian Hospital and Columbia University. GCRC Program Director, Dr. Robert E. Canfield, recently commented, "Clinical research symbolizes the best of the wedding of Hospital and University, testifying to the value of Mr. Harkness' vision that created the medical center."

The General Clinical Research Center is comprised of multiple elements: a fourteen bed adult unit on PH 4-West with a Metabolic Diet Kitchen, a four bed pediatric unit on BH 11-South, a new outpatient center soon to be constructed on VC-3, a core laboratory, administrative offices, and a highly specialized, NIH-developed data management computer system known as CLINFO. The CLINFO Data Management and Analysis System is a computer resource developed specifically to support clinical investigators in a research environment.

Patients like Mrs. Adele Tauriello (center) are benefiting from CPMC's substantial commitment to clinical research–a commitment made possible thanks to the joint efforts of Hospital President Dr. Felix E. Demartini (right) and Dr. Donald F. Tapley, Columbia University Dean of the Faculty of Medicine. With them on PH 4 West is GCRC Head Nurse Kathy Sweeney.

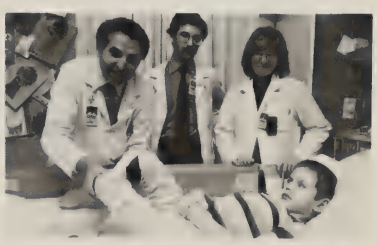
Dystonia Research Facility to Open at CPMC

Torsion dystonia is a neurologic disorder in which abnormal involuntary twisting develops. Although it can begin at any age, it most commonly starts in childhood. Peculiar posturing of a leg when walking is a common initial symptom. The disorder is poorly understood, but says Dr. Stanley Fahn, attending neurologist at Presbyterian Hospital, "There is evidence that the area of the brain involved is the deep nuclei, the basal ganglia."

Dr. Fahn explains that the disorder is frequently inherited, but can also arise from injury to the brain, such as a complication of encephalitis, head injury or stroke.

In an effort to answer some of the many questions concerning this crippling illness, including its origins and potential treatment, the Dystonia Medical Research Foundation has awarded Dr. Fahn a large grant to develop a Dystonia Research Center at Presbyterian Hospital. This five-year grant provides $350,000 annually for operating costs and $70,000 for a Tissue Resource Facility. It also provides $50,000 for start-up costs.

Dr. Fahn explains that the Tissue Resource Facility will be a center for the worldwide distribution to other research centers of blood samples, cerebrospinal fluid, skin fibroblasts and urine specimens of dystonia patients and their families.



With a young dystonia patient are (from left) Dr. Stanley Fahn, director of CPMC's new Dystonia Research Center and H. Houston Merritt Professor of Neurology; Dr. Robert E. Burke and Dr. Susan B. Bressman, fellows in neurology, who will be working closely with Dr. Fahn.

Seniors Discuss Health Cutbacks

Over sixty Washington Heights seniors got together at Presbyterian Hospital's Maxwell Hall on October 26 to discuss the effects on health care programs of the federal budget cuts. Addressing the audience were Congressman Ted Weiss; Dr. Betty Bernstein, legislative director for the New York City Department for the Aged; Betty Clark, aide to State Senator Franz Leichter; and Robert Carroll, chief of staff to Congressman Charles Rangel. The event was sponsored by the Presbyterian Hospital Community Health Council's Committee on Health Care for Seniors.

Mr. Robert Carroll, chief of staff to Congressman Charles Rangel, with seniors at PH.

N.I.H. Conference On C.T. Scanning

Presbyterian Hospital's Director of Neuroradiology Dr. Sadek K. Hilal was a participant in the recent "Consensus Development Conference on Computed Tomographic Scanning of the Brain," held at the National Institutes of Health, in Bethesda, Md. The meeting was part of the Consensus Development Program, which brings together leading biomedical investigators, practicing physicians, consumers, and others to evaluate and review the scientific soundness of health-related technologies. A primary objective of the program is to provide physicians and consumers with information regarding the safety and effectiveness of drugs, devices and procedures.

Health Education for Patients Debuts on PHTV Channel 3

Because hospitalized patients have a heightened interest in health and often feel anxious about surgery or treatment, Presbyterian Hospital is now providing a closed circuit television system for health education. The programs, which are broadcast over bedside television (Channel 3), have been "on the air" since early November.

The following topics were covered initially: high blood pressure detection; immunization (Spanish and English); over-the-counter drugs; having an operation (for children); nutrition (English and Spanish). New programs will be added on a monthly basis.

Girl Scouts Provide Trick or Treat Goodies At Babies Hospital

Patients in Babies Hospital were treated to some very special candies this Halloween when a New Jersey Girl Scout Troop provided the kids with eighty trick or treat bags. The bags were loaded with sugar-free and salt-free goodies.

The cadette group, number 50, from New Milford, N.J., included nine girls ages nine through thirteen.

OPHTHALMOLOGY: **Dr. Algernon B. Reese,** internationally recognized pioneer in the treatment of serious eye diseases in children, recently passed away following a lengthy illness. He was 85. Dr. Reese retired in 1962 after 32 years of service.

CANCER CENTER: **Dr. Sol Spiegelman** has been awarded the 1981 Antonio Feltrinelli International Prize in Biological Sciences. The $83,000 prize is known as "the Italian Nobel." During the award ceremony, which was attended by the President of Italy, Dr. Spiegelman discussed how genetic engineering will affect the welfare and future of mankind. During the ceremony Dr. Spiegelman was praised as having "dedicated himself to the study of the molecular basis of cancer. He has worked with tumors of viral origin such as leukemia in the mouse, and with cancer of the breast in humans. He showed that molecules of RNA similar to those present in tumors of viral origin in the mouse can be found in comparable human tumors. During the last two years, Dr. Spiegelman has developed a blood test for the identification of the presence of mammary cancer in mice and is extending it to human breast cancer."

DENTISTRY: **Dr. Bert Klatskin,** associate attending oral surgeon at Presbyterian Hospital, recently retired after 38 years of service. He was honored at a dinner given by the Division of Oral Surgery.

PSYCHIATRY: **Dr. Ronald R. Fieve** recently delivered five papers at the American Psychiatric Association Meeting in New Orleans: "A Morbid Risk Family Study of Affective Disorders, Economic and Social Implications of the Lithium Clinic," "The Lithium Clinic ... A Cost Benefit Approach," "Prophylaxis of Unipolar Depression," and "Diagnostic Differences of Lithium Kenetics." Dr. Fieve and his depression research team also recently presented four poster sessions at the World Congress of Biological Psychiatry in Stockholm.

CHILD PSYCHIATRY: Upcoming Grand Rounds to be held at the Neurological Institute are: 1/20: The Social Compatibility of Parents, Teachers and Physicians in the Treatment of Hyperactive Children. 2/10: Neuropsychiatry Research Unit Update. 2/24: Assessment and Modification of Parent-Child Interaction: The Role of Parental Characteristics.

Call 960-2421 for more information.

DENTAL AND ORAL SURGERY: **Dr. Robert Gottsegen,** former president of the American Academy of Periodontology, was awarded an honorary Fellowship in the Academy last fall.

MEDICINE: **Dr. Elliott F. Osserman** was recently awarded the Virchow Gold Medal and Scroll Award. The citation is presented by the Virchow-Pirquet Medical Society to individuals who excel in cancer research and immunology.

NEUROLOGY: **Dr. Niels L. Low** delivered a lecture on "Minor Motor Seizures and Retardation" at the IV International Symposium on Developmental Disorders recently held in Tokyo.

PSYCHIATRY: **Sir Martin Roth, M.D.,** professor and chairman, Department of Psychiatry at the University of Cambridge and Fellow of Trinity College, Cambridge was presented with the semi-annual Leonard Cammer Memorial Award at the New York State Psychiatric Insitute. The award has been established in perpetuity in honor of Dr. Leonard Cammer, a distinguished psychiatric physician of the New York area.

New Vice President, Personnel

Presbyterian Hospital has appointed a new Vice President for Personnel, Mr. Irwin Plotkin. Mr. Plotkin formerly was Director of Human Resources at the Jewish Hospital and Medical Center of Brooklyn; and prior to that, he was Deputy Assistant Commissioner at Kings County Medical Center. He also spent two years as Administrative Officer for the National Public Health Service in Liberia. Other personnel administration experience included tours with the New York State Department of Mental Hygiene, and the New York State Civil Service.

Mr. Plotkin, the holder of a Masters Degree in Public Administration from New York University, is known for being people-oriented, and a proponent of applying systems to the management of human resources.

DERMATOLOGY NURSING CONFERENCE HELD AT PH

Approximately fifty nurses from around the country congregated at CPMC this Fall for the "Second Annual Dermatology Nursing Conference: The Expanding Role of the Nurse in Dermatology Care."

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STETHOSCOPE

NEWS OF COLUMBIA-PRESBYTERIAN MEDICAL CENTER

37N2

NEUROLOGICAL ILLNESSES UNDER ATTACK

LEADING THE WAY IN NEUROSURGERY
REVOLUTION IN NEURODIAGNOSTICS
PITUITARY SURGERY: A PERSONAL PERSPECTIVE

STETHOSCOPE

MARCH, 1982
VOLUME XXXVII No 2

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OF PRESBYTERIAN HOSPITAL

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ON THE COVER: *Four years ago 12 year-old Kim Macchia collapsed in a coma on the living room floor of her Long Island home. An abnormal cluster of blood vessels deep within her brain had ruptured. Despite a satisfactory recovery, Kim lived in constant danger of another hemorrhage. Early in January, 1982 Kim was again in serious condition following a second rupture. She was flown to Presbyterian Hospital by a Coast Guard helicopter. On January 29, neurosurgeon W. Jost Michelsen, M.D., performed a rare 8 hour procedure.*

THE NERVOUS SYSTEM: A MULTITUDE OF QUESTIONS

From the abstractions of modern art to the concise complexity of a computer, the human brain is capable of conceiving and creating an apparently infinite variety of forms. Yet the organ responsible for all of man's inventions and achievements is almost strikingly undramatic in appearance. An amorphous mass of white cells blushing with blood vessels, the brain shows no visible sign of its prodigious and constant activity.

Weighing about three pounds, the adult brain is estimated to be composed of approximately one-hundred billion nerve cells (neurons), about the same number as stars in the Milky Way. Each neuron, in turn, may have from 1,000 to 10,000 synapses, or points of communication with other nerve cells. Neurobiologists estimate that there are approximately one-hundred trillion such points of interaction in the brain. Inside the nucleus of each neuron is the biochemical machinery necessary for synthesizing enzymes, the thirty or more transmitter substances that act as chemical messengers, relaying excitatory or inhibitory information from cell to cell.

Although our understanding of the brain and the rest of the nervous system has progressed by leaps and bounds over the last fifty years, and although many conditions affecting the nervous system are now almost completely curable, the nervous system remains in many ways an enigma. "What I find to be most amazing about the human brain," says PH Attending Neurosurgeon Dr. Kalmon Post, "is how much is still unknown. How brain chemicals interact; how memory is coded; how one area of the brain communicates with another; whether there can be regeneration of nervous tissue. These are fundamental questions that still remain to be answered."

Many of these questions have important clinical implications. Does a deficiency of the neurotransmitter acetylcholine cause the progressive loss of memory indicative of Alzheimer's disease—

and if so, what causes the deficiency? An answer to this question could affect some 500,000 Americans who develop the disease each year. Does a virus affect the energy producing sections of neurons (mitochondria) resulting in sudden disorientation and eventual coma in children afflicted with Reye Syndrome? Again, the answer could affect thousands of lives.

At Presbyterian Hospital and throughout the Columbia-Presbyterian Medical Center, as this issue of STETHOSCOPE indicates, steady progress is being made in understanding and treating these and many other neurological conditions.

LEADING THE WAY IN NEUROSURGERY

Guided by intense illumination, neurosurgeons remove an occipital brain tumor. Brain tumors account for approximately 40 of the 130 or so neurosurgical procedures performed at PH each month.

A thirty-year old woman is now able to have children after a long period of infertility. A middle aged man no longer confronts the risk of a debilitating stroke. A young engineer no longer fears a sudden cerebral hemorrhage. For the first time in fifteen years a housewife feels no pain in her right cheek.

Thanks to a succession of advances in neurosurgical treatment, these patients, and most of the one-hundred-and-thirty other patients treated each month by Presbyterian Hospital's Neurological Surgery Service, are able to return to or begin normal, healthy lives.

A TECHNOLOGICAL REVOLUTION

"Neurosurgery has undergone a technological revolution over the last ten to fifteen years," says Dr. Bennett M. Stein, director of PH's Neurological Surgery Service. He points to the development and implementation of microsurgical techniques as the spearhead of that revolution. "Eighty-five percent of our cases involve the use of the operating microscope or of microsurgical instrumentation, much of which did not exist until 1965," he says. "Microsurgery is essential to the successful treatment of pituitary, acoustic and spinal tumors, as well as vascular disorders of the nervous system. It is particularly valuable in vascular surgery because many blood vessels are only about 1½ millimeters in diameter."

The latest technical advance in neurological surgery at PH has been the introduction of the operating laser. Already successfully used in the treatment of a handful of patients, a new carbon dioxide laser has shown itself to be of value in controlling bleeding and in minimizing harm to sensitive tissues surrounding tumors.

"We're particularly excited about using the laser in conjunction with the microscope," says attending neurosurgeon Dr. Kalmon Post. "The laser-microscope approach is enhancing precision, and that means enhanced safety," he adds. Dr. Post estimates that the new device, the first of its kind in the New York area, "could eventually be applicable to between ten and fifteen percent of the Neurological Service's 1,300 annual cases."

NEUROSURGERY THAT RESTORES FERTILITY

"I guess there must be five or ten children out there who've been named after me," jokes Dr. Post referring to the 250 or so pituitary tumors he has removed, some of which were removed specifically to restore fertility.

The author of a five-hundred page

volume on pituitary tumors, Dr. Post explains that in women one of the early signs of one kind of pituitary tumor is amenorrhea (abnormal cessation of menses).

Since the condition results in infertility, it can be easily misdiagnosed as a gynecological problem.

Two advances, however, have made it possible to accurately diagnose these lentil-size tumors early: The development of Computed Tomography (CT scanning), and the discovery of human prolactin by Dr. Andrew Frantz, chief of the Division of Endocrinology.

PROLACTIN: DIAGNOSTIC KEY

Located at the base of the brain and approximately at the center of the head, the normal pituitary gland is hardly larger than the eraser on the end of a pencil. Yet this tiny structure plays a pivotal role in controlling such essential functions as growth, blood pressure, fat distribution, bone strength and fertility.

Normally, the pituitary (also known as the master gland) maintains a level of one to twenty-five nanograms of prolactin per milliliter of blood (a nanogram is one-billionth of a gram). But a tumor hardly visible to the naked eye, which causes the pituitary to increase prolactin production by as little as five trillionths of a gram per milliliter, can shut down the female reproductive system or cause breast enlargement and reduced potency in men.

SMALL TUMORS IDENTIFIED EARLY

Until Dr. Frantz' discovery of human prolactin in 1970, doctors had no precise test for ascertaining the presence of a very small pituitary tumor. "The determination of prolactin concentration in blood has become one of the most important of all diagnostic tests in the work-up of a patient with a suspected pituitary tumor," says Dr. Frantz, who points out that up to 100,000 Americans per year are diagnosed as having pituitary tumors.

"The test for determining prolactin levels in the blood has allowed us to identify very small tumors before they cause serious harm," explains Dr. Edgar M. Housepian, attending neurological surgeon at Presbyterian Hospital. He adds, "Our very high success rate in this area of treatment is largely the result of early detection."

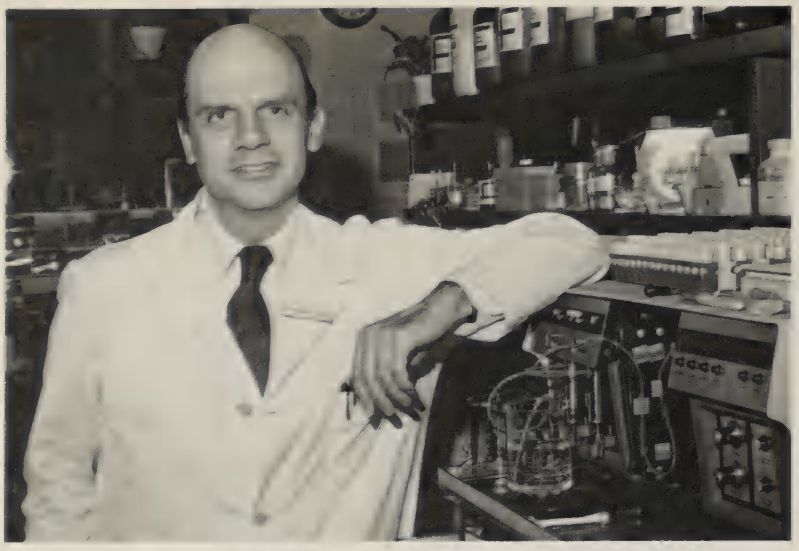
Other kinds of pituitary tumors cause Cushing's disease, a condition characterized by hypertension, heart disease and calcium loss in the bones; and acromegaly, a condition in which the nose, lips, tongue, hands and feet increase in size. Both are the result of overproduction of specific hormones by the pituitary gland.

REMOVING THE INTRUDER

Considering the high incidence of pituitary tumors, one of the most important recent advances in neurosurgery has been the successful development of a safe, quick method of reaching and removing these potentially life-threatening bodies.

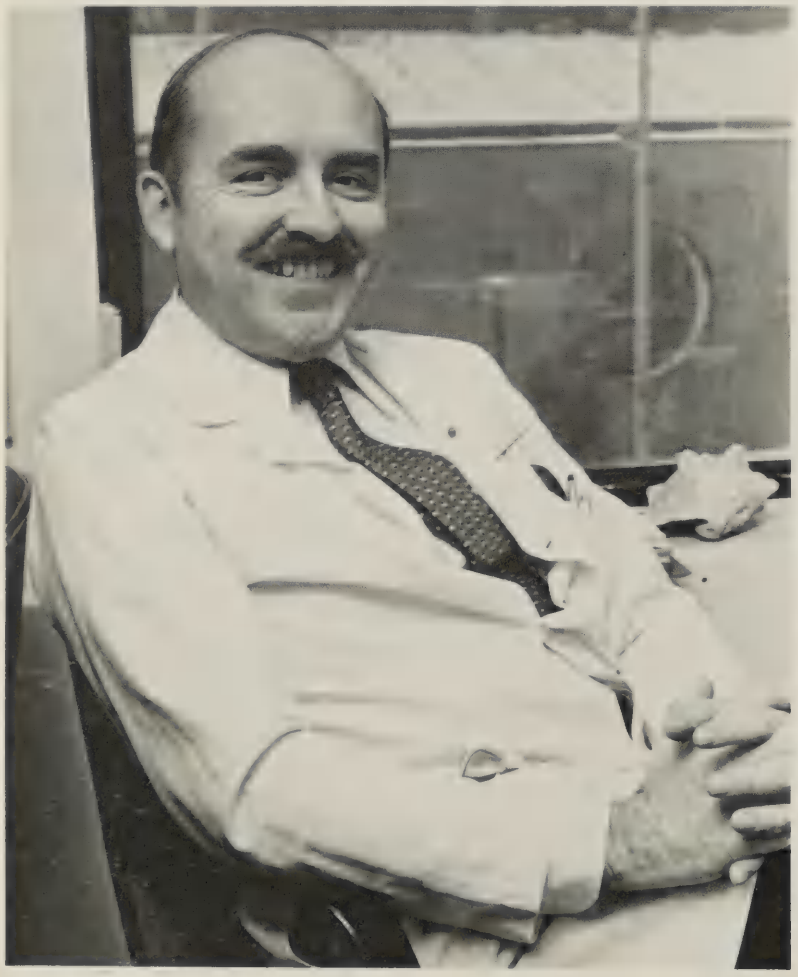
Until the early Seventies, removal of a pituitary tumor meant performing a major operation to approach the area underneath the brain. Over the last ten years, however, this extensive procedure, known as a frontal craniotomy, has been gradually replaced by a system (first performed at PH by Dr. Housepian) called the transphenoidal approach (see: "Pituitary Surgery: A Personal Perspective," for details). The technique, which requires a small incision beneath the upper lip, was not practical until the introduction of the operating microscope and the improvement of televised radiofluoros-

A new carbon dioxide laser being used by Presbyterian Hospital's Neurological Surgery Service is the first of its kind in the New York area.



Dr. Andrew Frantz. His discovery of human prolactin has given doctors a precise test for ascertaining the presence of very small pituitary tumors.

Neurovascular surgery specialist Dr. Donald Quest. Since the early 1950s, over 4000 PH patients have undergone neurovascular surgery.



copy allowing doctors in the operating room to precisely see the tumor and surrounding structures.

MINIMIZING THE RISK OF STROKE

In addition to its eminent status as a center for the treatment of the two-dozen or so varieties of neurological tumors, Presbyterian Hospital's Neurosurgery Service is a recognized leader in the field of neurovascular surgery.

Since the early 1950's over four-thousand PH patients have undergone surgery to remedy such life-threatening conditions as carotid artery disease, cerebral aneurysms (abnormal ballooning of blood vessels), and arteriovenous malformations (abnormal masses of blood vessels), to name a few major areas.

Presbyterian Hospital neurosurgeons such as former Director Dr. J. Lawrence Pool and Dr. Lester Mount, as well as Dr. James Correll (currently at PH) who is recognized nationally as a pioneer in carotid artery surgery, and Drs. James McMurtry, Bennett M. Stein and Jost Michelsen, have made major contributions in the field of neurovascular treatment.

Dr. Donald Quest, one of PH's neurovascular surgery specialists, explains that success in his field is dependent upon prevention.

"Once a stroke has occurred," he says, "little can be done to reverse the damage."

He adds that improvements in treatment have followed closely on the footsteps of refinements in diagnostics. "Successful surgery to remove plaque which may cause a stroke is closely linked to accurate visualization of blood vessel defects," says Dr. Quest. He points to the recent introduction at Presbyterian Hospital of a promising non-invasive diagnostic technique called digital subtraction angiography in which a computer is used to enhance the image of blood vessels containing a contrast material. "The technique requires only an intravenous injection to yield very clear images of blood vessels," he says.

Neurovascular surgery also has greatly benefited from recent advances in microsurgical techniques. Says Dr. Quest, "In many cases we have to completely bypass the carotid artery, reconnecting one of its branches to smaller brain arteries. This involves suturing together blood vessels that may be only one millimeter in diameter."

A NEUROLOGICAL TIME BOMB

What's an AVM? Although it sounds like something out of a Defense Department manual, an AVM might be described as a neurological time bomb. "An AVM is a congenital defect—an abnormal mass of blood

vessels in the brain which can hemorrhage at any time," says PH neurosurgeon Dr. W. Jost Michelsen who, along with Dr. Stein and PH Director of Neuroradiology Dr. Sadek Hilal, have pioneered a safe method called "embolization" for neutralizing AVMs.

Embolization involves the delivery, through a special catheter, of plastic pellets or liquid plastic (emboli) to the site of the malformation. The pellets are designed to cut off the AVM's blood supply and redistribute blood to other areas of the brain. The procedure opens the way for safe, surgical removal of an AVM, thereby neutralizing its potential for spontaneous hemorrhage.

Drs. Michelsen and Hilal and other members of PH's neurological surgery team have an impressive list of firsts in the embolization field. They were the first to embolize benign tumors and the first to introduce a catheter into the intercranial blood vessels. They were also the first to do an electroencephalograph with an electrode on a catheter inserted into a blood vessel in the brain.

Dr. Hilal helped develop the advanced catheters needed to navigate the vascular system inside the brain, and is credited with the application of liquid silicone used to embolize tumors and spinal arteriovenous malformations. Dr. Hilal and colleagues have used the embolization technique to neutralize over 400 AVMs and tumors.

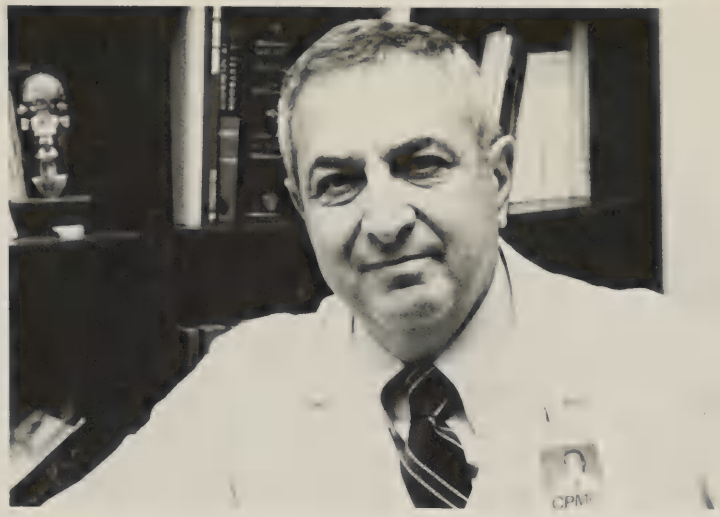
SILENCING THE PAIN CARRIERS

Severe, intermittent facial pain is the primary symptom of trigeminal neuralgia (also known as tic douloureux), a serious neurological condition which strikes between five and ten thousand Americans each year. The cause of trigeminal neuralgia is not yet clear, but Presbyterian Hospital has become an important center for the treatment of this condition.

The pain relieving proceduce, which in most cases provides an alternative to intricate and sometimes dangerous surgery, involves the insertion of a single needle into the trigeminal nerve deep within the face and the use of radio-frequency current to heat a minute area within the nerve to destroy the pathways that transmit pain. The patient's ability to feel sensations other than pain remains unaffected.

"The fibers within the nerve which carry pain messages are highly susceptible to heat," explains PH neurosurgeon Dr. Ronald Brisman, who has performed well over one hundred of the procedures over the last six years.

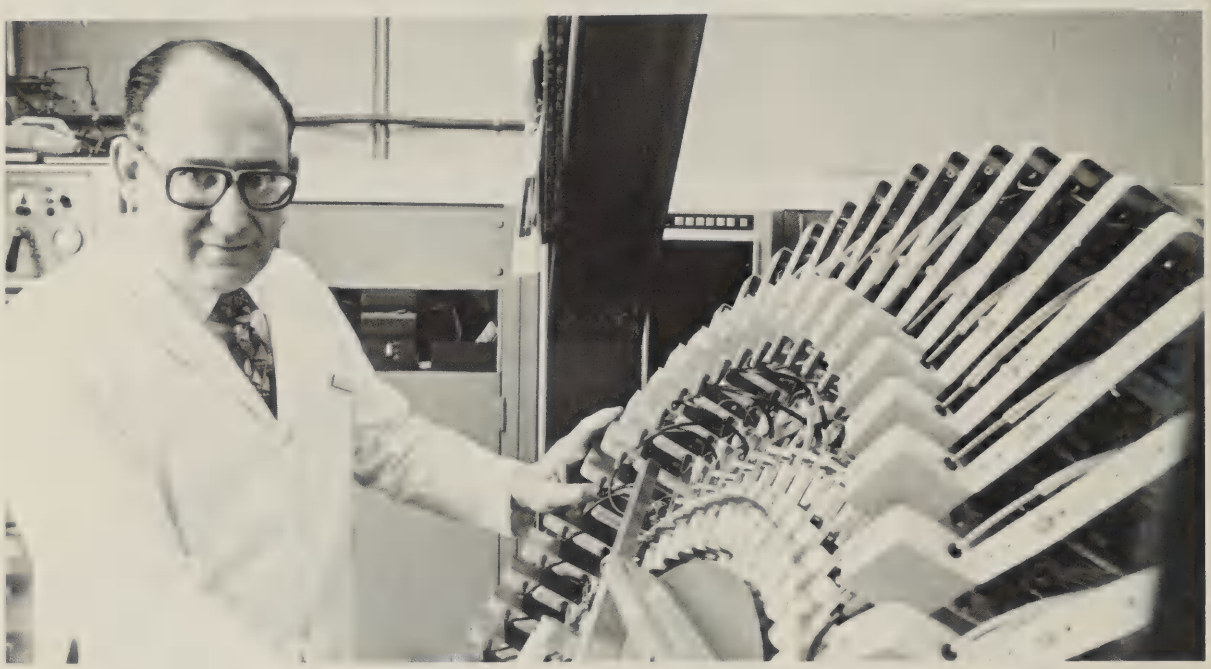
The procedure usually lasts two hours. Patients generally are able to leave the Hospital the next morning.



TOP: Neurosurgeon Edgar M. Housepian, M.D., "Our high success rate in removing pituitary tumors is largely the result of early detection."

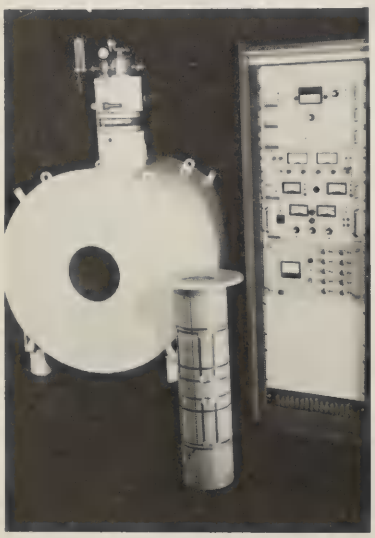
BOTTOM: Drs. W. Jost Michelsen (left) and Sadek K. Hilal have drawn national attention for their pioneering work in neutralizing arteriovenous malformations.

NMR AND PET: REVOLUTION IN NEURODIAGNOSTICS



ABOVE: Director of Neuroradiology Dr. Sadek K. Hilal with positron emission tomography scanner. The scanner will be used to produce metabolic portraits of the nervous system.

BELOW: CPMC's new research nuclear magnetic resonance scanner. Photo courtesy of Intermagnetics General Corporation.



A diagnostic instrument that can differentiate between the earliest stages of malignancy and more advanced cancers, or tell the difference between a reversible stroke and one that is beyond repair?

At CPMC, neuroradiologists are beginning to evaluate cross-sectional images produced by the first "high field" nuclear magnetic resonance (NMR) scanner—a device that will perform these diagnostic functions, and more.

According to Dr. Sadek K. Hilal, director of neuroradiology at the Medical Center, "We believe that high field NMR will enable radiologists to significantly expand the diagnostic capabilities of medical imaging, with little or no risk to patients."

The new scanner is expected to show excellent differentiation between grey and white matter in the brain (cortical and fibrous tissues respectively)—a function that may help doctors diagnose diseases such as multiple sclerosis which involve neuronal degeneration.

With specifications developed by Dr. Hilal and CPMC colleagues Drs. Andrew Maudsley and William Perman, and microelectronics manufactured at the Medical Center, the new scanner is the first in the U.S. It also contains the most powerful magnet in the world for NMR imaging.

CPMC's prototype NMR device is based on the simple fact that all living cells contain sodium and phosphorous. When a selected part of the body is exposed to powerful magnetic fields these two substances emit signals that can be picked up by a scanner.

Dr. Hilal explains that, for instance, a dead cell contains much more sodium than a living cell. "By measuring the quantity of sodium in the areas of the brain affected by a stroke we will be able to physically determine the extent of the damage," he says.

Under the co-direction of Dr. Hilal and Dr. Z.H. Cho, an internationally known physicist, a very high resolution positron emission tomography (PET) scanner was recently built at the Medical Center. One of a small handful of such devices scattered across the U.S., the new scanner will produce metabolic portraits of the nervous system, revealing the rate at which sick and healthy tissues consume biochemicals. "The PET scanner will be particularly useful in evaluating epilepsy, because it will allow us to determine the locus of a seizure," says Dr. Hilal.

The development of "high field" NMR and PET scanning capability by Dr. Hilal and researchers at the College of Physicians and Surgeons hopefully will be applied to patient care at Presbyterian Hospital in the near future.

PITUITARY SURGERY: A PERSONAL PERSPECTIVE

Janet Ruggiero in her Long Island home.

Janet Ruggiero wanted to have a second child. Three years after her son was born Janet stopped taking birth control pills. A few months later she was pregnant. But the pregnancy resulted in a miscarriage and her periods did not return. Painful headaches followed. Occasionally Janet felt dizzy. A few times she blacked out.

A visit to a Long Island gynecologist revealed an abnormally high prolactin level, a symptom that may indicate a dysfunction of the pituitary gland.

Located roughly at the center of the head and at the base of the brain, the pituitary gland controls a number of vital functions, including fertility. If the pituitary produces too much prolactin—too much can be as little as a few trillionths of a gram—ovulation will cease.

On a cool, sunny morning last Fall Janet sat in the office of Presbyterian Hospital neurosurgeon Dr. Edgar M. Housepian. A second prolactin test obtained by PH endocrinologist Dr. Donald Holub had again revealed an abnormally high level, and a C.T. scan had clearly shown a growth in Janet's pituitary.

"Dr. Housepian described what was going to happen," says Janet, "but I was scared. I had never had an operation before. I didn't want to talk to anyone except my husband."

But on October 12, as Janet woke up from her operation in the Neurological Institute, she was exhuberant. "I thought to myself: I'm alive. At that moment I was very happy. From then on I got better quickly."

Janet's condition was caused by a small prolactin-secreting adenoma (glandular tumor). "It's the most common of the pituitary tumors," says Dr. Housepian who, along with otolaryngologist Dr. Robert Hui, removed the growth during a two hour operation.

The procedure, which leaves no scar, involves a small incision beneath the upper lip. This allows access to the sphenoid sinus and finally to the pituitary gland. The tumor is then removed with the help of a powerful microscope.

One week after surgery Janet was on her way home. "I felt better than I had in a long time," she recalls, "But my happiness came from more than just a feeling of health. It came from knowing that I could look forward to the possibility of having another child."

NEUROLOGICAL ILLNESSES UNDER ATTACK AT PH— A LOOK AT NEW AND DEVELOPING TREATMENTS

Dr. Timothy Pedley (left) with Dr. Ron Emerson. Dr. Pedley explains that the graphs produced by evoked potentials monitoring, such as those in his right hand, are easier to read than conventional EEG graphs.

An electronic monitoring system helps to assure safety as a dangerous mass of blood vessels is removed from the spinal cord of a young woman. A twelve year old boy regains consciousness after two days of coma due to Reye syndrome—a condition which until recently was almost always fatal. A fifty-four year old electrician can return to work, the shaking in his hands controlled by medications.

At Presbyterian Hospital over 2,500 inpatients and some 24,000 ambulatory patients are treated for neurological problems such as these each year.

Dr. Lewis P. Rowland, director of Presbyterian Hospital's Neurology Service, points out that during the last decade or so many illnesses in this extraordinarily complex field have become largely treatable.

"We've made significant strides in understanding and controlling many of the movement disorders such as parkinson disease and dystonia," he says. "We've developed tests that will determine whether prospective parents have a genetic defect which might result in certain kinds of neuromuscular illnesses in children, and we've developed a broad understanding of many of the physiological problems that may trigger brain damage in premature infants. However," he adds, "many illnesses, such as muscular dystrophy, multiple sclerosis and dementia of the aged remain untreatable. We still have a very long way to go."

EVOKED POTENTIALS: LINKING NEUROLOGY AND NEUROSURGERY

Although she was only thirty years old, Jeanette had begun to hope she would die. Her feelings evolved over a two year period during which she developed shortness of breath and a burning pain in her right arm. Then, a few months ago, as she leaned over to pick up the newspaper on her doorstep, a blinding flash of pain shot through her neck and arm. During the weeks that followed, Jeanette had several similar attacks. Gradually, parts of her body became paralyzed.

Referred to Presbyterian Hospital's Neurological Surgery Service, Jeanette underwent a thirteen hour operation last December to remove an arteriovenous malformation (an abnormal mass of blood vessels) from the center of her spinal cord. She is alive today largely because of the innovative application of microsurgical pro-

cedures assisted by the use of sensory evoked potentials monitoring, an electronic technique which, until twelve months ago, had never before been used in the operating room.

As Dr. Bennett M. Stein, chief of neurosurgery at PH, gently removed portions of Jeanette's vascular malformation, weak electric shocks were administered to peripheral nerves in her legs. The impulses were then picked up by electrodes below and above the site of surgery.

"Evoked potentials measure neurological response to a very specific stimulus," explains Dr. Timothy Pedley, associate director of the EEG and Evoked Potential Laboratory. "It's use in the operating room is significant, because it allows surgeons to detect damage to nerve tissues before the damage is irreversible."

To date, only three or four medical centers across the U.S. are using evoked potential measurements in the operating room.

According to Dr. Pedley. "We have every reason to expect that evoked potential monitoring will become commonplace in the surgical treatment of vascular disease, specific brain and spinal cord lesions and in other situations in which clinical examination may be difficult. These include the management of newborn infants or very young children. This technique is already being widely used to detect possible acoustic tumors and to aid in the diagnosis of multiple sclerosis."

Measurement of evoked potentials relies on a computer and microelectronics to detect electrical signals as weak as half a microvolt. The signals are then automatically analyzed, providing doctors with graphs of neurological activity.

Dr. Pedley predicts that doctors will be increasingly willing to take on potentially dangerous neurosurgical procedures because of the safety factor afforded by evoked potential and other electrophysiological monitoring methods.

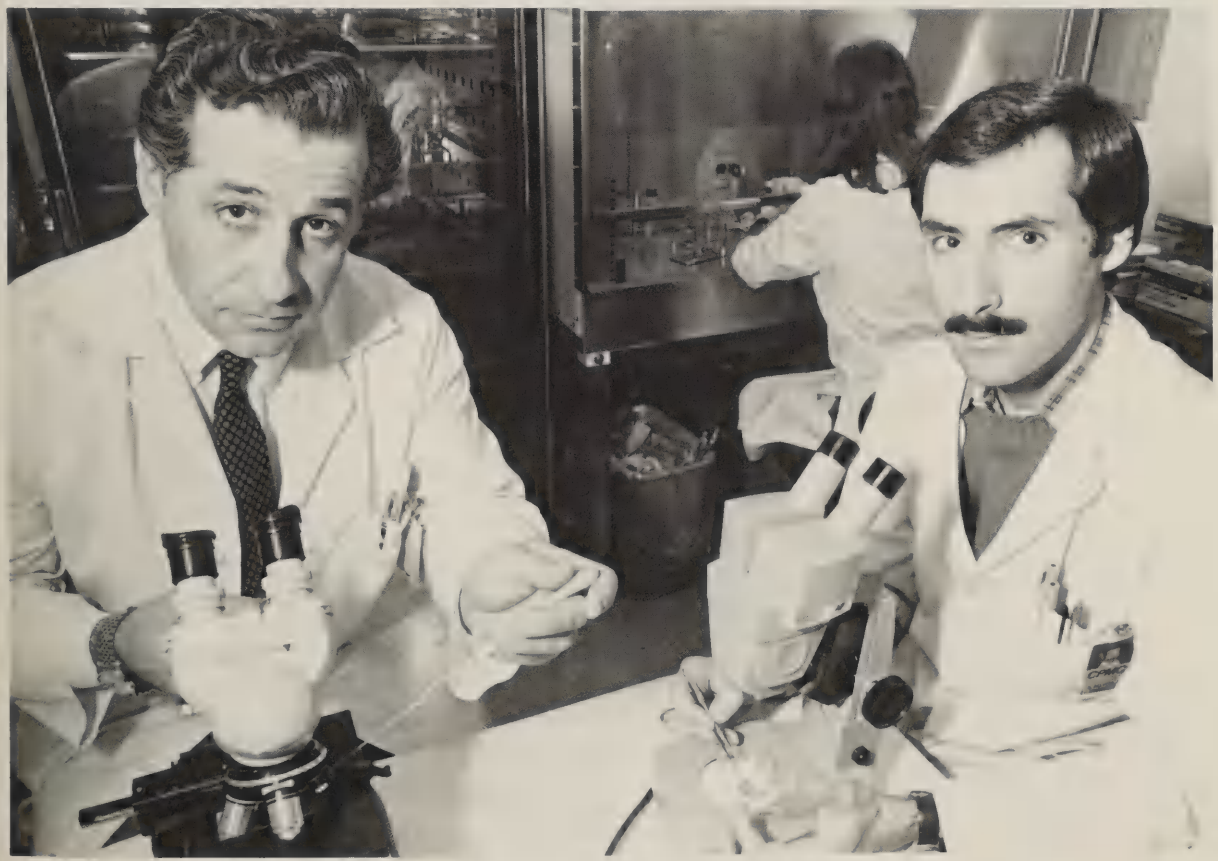
INSURING A HEALTHY FUTURE

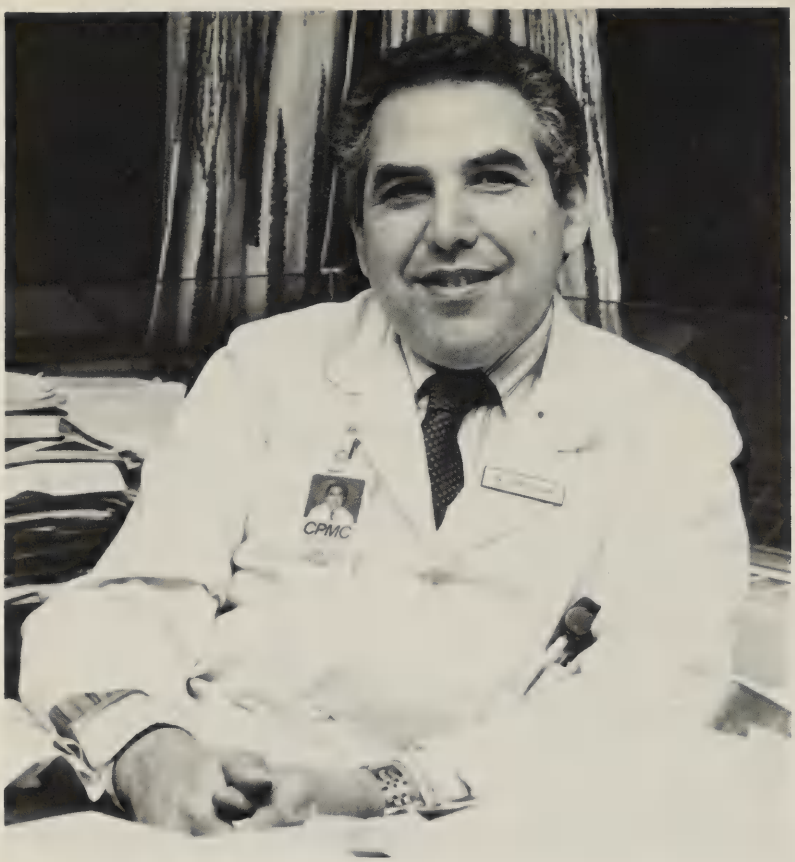
At the Medical Center's Division of Pediatric Neurology doctors have been waging a determined war against a variety of potentially deadly illnesses.

Under the supervision of Dr. Darryl DeVivo, director of the Division, Drs. William Johnson and William Maltese are studying biochemical changes in the spinal fluid of infants to determine the mechanisms that may trigger intra-

ABOVE: In the premature infant, the head shrinks after birth. As this occurs, the germinal matrix of the brain (central area) is likely to hemorrhage.

BELOW: Dr. Darryl DeVivo (left) and Dr. William Maltese. "We're looking for the chemical compound that will stop cholesterol synthesis only in tumors."





Dr. Stanley Fahn, "The treatment of parkinson disease has been one of our greatest successes."

cranial hemorrhage, the leading cause of death among premature infants.

In cooperation with Drs. Stanley James, John Driscoll and Raymond Stark of the Division of Perinatology at Babies Hospital, Dr. DeVivo and colleagues are attempting to identify which factors control tissue pressure in the area at the center of the infant brain (germinal matrix) where hemorrhages occur. "Although we have not determined the precise mechanisms involved," says Dr. DeVivo, "our understanding of the biochemistry of the immature nervous system will have a significant effect in reducing infant mortality and neurologic morbidity."

Says Dr. James, "Research in this area is leading to earlier and more precise diagnoses of intraventricular hemorrhage and to the possibility of developing new therapeutic approaches. In particular, it has led to the expanded use of ultrasound in the ICU. This is a very significant advance in our ability to diagnose abnormalities."

INHIBITING TUMOR GROWTH

A second major thrust of investigation in pediatric neurology is directed at treating the 150 or so children diagnosed each year at PH with brain tumors. Future progress is centered around preventing the growth of tumors.

"This is an area which is showing considerable promise," says Dr. DeVivo, who points to the identification by Dr. Maltese of several powerful inhibitors of cholesterol synthesis in tumors. "Without cholesterol, tumors can't grow," explains Dr. Maltese. "We've shown that malignant tumors require a great deal of cholesterol. And we've also had some success in killing tumors by using compounds that inhibit cholesterol synthesis. Now we're looking for that chemical compound that will stop cholesterol synthesis only in tumors, without affecting the metabolism of normal cells."

Drs. DeVivo and Maltese, assisted by Dr. Graziella Uziel, research worker Shahnaz Khan and tissue culture technician Christina Panzarasa, are investigating many other links between neurological diseases and cell metabolism at P & S.

For instance, investigation of brain metabolism during fasting has shed light on the mechanism of seizure control that accompanies fasting or a high fat diet. A high fat diet is used to treat patients with drug resistant forms of epilepsy.

REYE SYNDROME: TREATMENT SUCCESS STORY

But the greatest success to result from studies of cell metabolism relates to the treatment of Reye syndrome. Still one of the major causes of death among young children, not one patient has been lost to Reye's at PH since 1979. The illness, which generally affects children six to twelve years of age, usually develops a few days after recovery from a viral disease such as influenza or chicken pox. Within six to forty-eight hours the Reye syndrome child begins vomiting, becomes agitated, then sleepy and confused and finally falls into a coma. The condition is characterized by massive swelling of the brain. In 1963, when Reye syndrome was first identified, the illness was nearly one-hundred percent fatal.

Treatment, which includes intravenous administration of mannitol (an alcohol that cannot be metabolized) together with glucose, and constant monitoring of intracranial pressure, is based on evidence that, in Reye syndrome, metabolism of fatty acids in the liver is blocked. Dr. DeVivo explains that the illness has been linked to a breakdown in the function of the energy synthesizing bodies (mitochondria) within cells.

Together with Dr. Salvatore DiMauro and Dr. Alex Stalcup, both of CPMC, Dr. DeVivo is investigating how viruses may interfere with mitochondrial function.

A CENTER FOR MOVEMENT DISORDERS

Although otherwise in good health, Jack had been forced to leave his job because of uncontrollable shaking in his hands. Referred to Presbyterian Hospital in 1969, he was diagnosed as having parkinson disease and was treated with a then revolutionary drug called L-Dopa which controlled his condition.

Jack is one of approximately one million Americans who suffer from parkinson disease. Nearly a million more have one of a variety of other movement disorders such as torsion dystonia, tardive dyskinesia, tics, Huntington's chorea, and others. For many of these patients, Presbyterian Hospital's movement disorders program—the largest in the U.S.—offers concrete hope for improvement.

Dr. Stanley Fahn, director of the program and co-editor of a soon-to-be-published book on movement disorders, says that in recent years neurologists at the Medical Center have developed ways to reduce the severity of many of these illnesses.

"Parkinson disease has been one of our greatest successes," says Dr. Fahn, who has treated over 300 parkinson patients since 1973. "We have been involved in the treatment of parkinson disease since the first drugs to control tremors were used in the 1950's. In the late Sixties, L-Dopa was tested here. We did the first double blind studies on this drug, which was found to eliminate almost all symptoms in some patients. Most recently our team has evaluated new drugs for parkinsonism," adds Dr. Fahn.

In addition to an intensive program for the study and treatment of parkinson disease, P&S recently won a large grant to open a dystonia research facility at the Medical Center. Dystonia is a disorder in which abnormal involuntary twisting develops.

"In some dystonic children we have had almost complete remission, with a treatment program we developed," says Dr. Fahn; "but we don't know yet exactly why some cases improve while others don't."

DISCOVERING NEW DISEASES

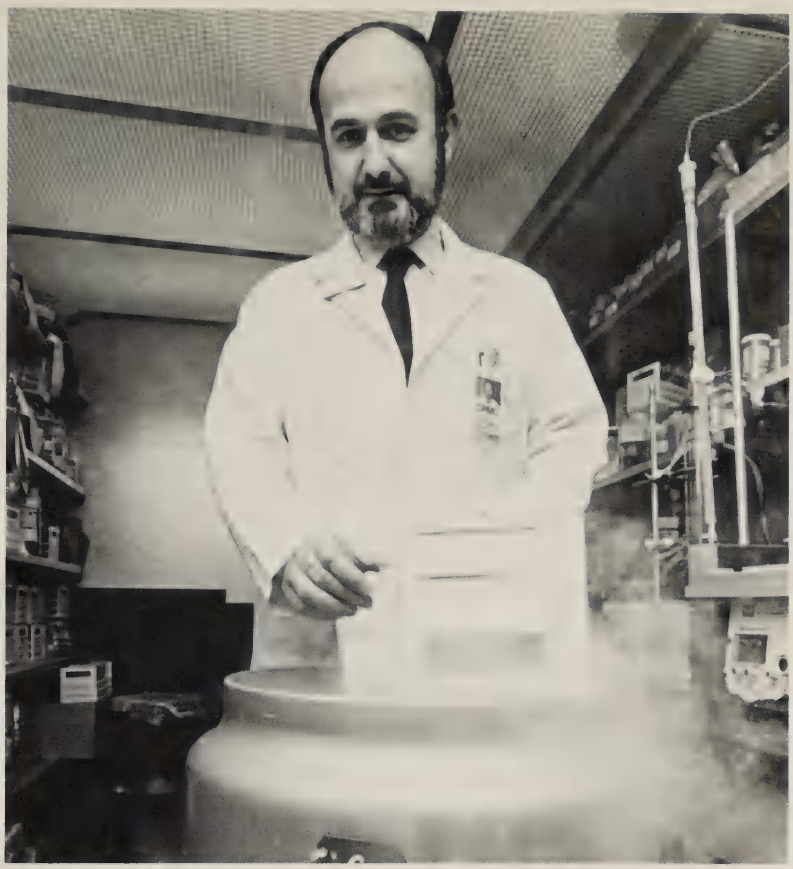
While Dr. Fahn and others are studying the part of the brain known as the basal ganglia which is thought to be at the root of most movement disorders, another group of investigators here headed by Dr. Salvatore DiMauro, is looking into biochemical changes within muscles which may trigger a variety of rare muscle diseases in which the provision of energy is affected.

Myoglobinuria is one such illness. One of its victims is Ted, a thirty year old mechanic. Ted's condition resulted in painful swelling of his muscles every time he would perform a strenuous task. Activities as mundane (for others) as shoveling snow were out of the question for Ted.

But doctors here have been working hard to help Ted, and others like him. In 1973, working with Dr. Lewis P. Rowland, Dr. DiMauro discovered that myoglobinuria patients were deficient in an enzyme (carnitine palmityltransferase, C.P.T.) which affects lipid (fat) metabolism in muscles. Lipids provide the energy needed by muscles for long, strenuous activities. The discovery of CPT deficiency has suggested dietary approaches for the control of myoglobinuria.

In the last twelve months Drs. DiMauro and CPMC co-investigator Armond Miranda have discovered two other, similar illnesses deriving from specific enzyme deficiencies.

"Many of the illnesses caused by enzyme deficiencies are genetic," says Dr. DiMauro, adding, "As we identify more and more illnesses, we not only increase knowledge about the mechanisms of the disease process and possible treatments, but we also can identify parents who are likely to transmit these problems to their children."



Dr. Salvatore DiMauro with liquid nitrogen refrigerator. Inside are muscle samples collected over the last 15 years. The specimens are used for a broad variety of diagnostic and research purposes.

PH Seminar Draws 250 Pharmacists

Dr. Harold Neu (left) with Mr. Harry Morelli.

Over 250 pharmacists from all over the state attended a January seminar sponsored by the Presbyterian Hospital Pharmacy Department entitled "The New Generation of Beta-Lactam Antibiotics." Dr. Harold C. Neu, chief of the Division of Infectious Diseases at Presbyterian Hospital and one of the principal investigators in the development of bata-lactam antibiotics, moderated the program. Mr. Harry Morelli, PH director of Pharmacy Services, planned and organized the seminar and was one of four panel members. According to Dr. Neu, beta-lactam antibiotics are the most widely used antibiotics in the world. They have increased activity over previously used antibiotics, and are also less toxic.

Prizes Will Highlight Annual School of Nursing Benefit Party

The annual benefit party of the Columbia University School of Nursing will be held from 4:30 to 7:30 on April 1 in the Faculty Center. Scheduled to include live music, an open bar and super hors d'oeuvres, the party will be highlighted by a raffle for such gifts as a $1500 dress donated by Bill Blass; a trip for two (seven nights) to San Juan, Puerto Rico donated by the Condado Holiday Inn of Puerto Rico and the Student Nurses Scholarship Fund Committee; and a thirteen inch color, portable TV (also donated by the Committee). Tickets for the event can be purchased from the Student Affairs Office (Maxwell, Rm. 119), or by calling 694-2803.

Art Gallery Tours Benefit Pediatric Program

The Maxwell Leeds Pediatric Tumor Foundation, a major source of support for the Hematology and Oncology Division of the Babies Hospital unit of Presbyterian Hospital, recently raised $1,000 by giving art gallery tours in Manhattan, and donated the funds to be used for childhood cancer research and treatment efforts at Babies Hospital.

Backing Health Education In Washington Heights

During the last twelve months over 2000 Washington Heights residents have been trained to identify a variety of health problems, thanks to a CPMC program. The Center for Population and Family Health has been running the Community Health Advocacy Program—a program designed to identify and prevent health problems among adolescents and women under 45 and their families. CHAP advocates are trained to provide preventive health education, simple health screenings, counseling and referral information to their peers. If you'd like to know more about CHAP, or refer a client to the program, please call 694-7954.

Parents for Parents Meeting

"Hope for the Future" was the theme of a recent "Parents for Parents" meeting held in Babies Hospital. In attendance were Dr. John F. Nicholson who spoke on diabetes; Dr. Sylvia Griffiths, who spoke on cardiology; Dr. John Schullinger, who spoke on surgery; and Dr. Anneliese Sitarz, who spoke on pediatric hematology/oncology.

Parents for Parents is an organization which seeks to put parents of ill children in contact with one another. The evening was highlighted by a $1,000 contribution given by the Board of Women Managers of Babies Hospitals to the Mrs. Joseph McMullan Fund for Parents for Parents.

The Parents for Parents group will be working closely with the Patient Relations office of Presbyterian Hospital to assist parents with problems. For information please call 694-5904.

UROLOGY: **Dr. Carl A. Olsson** was a visiting professor in Rio de Janeiro at the urinary cancer conference sponsored by the Centro de Estudos, Brazil's counterpart to the American Academy of Medicine. During his visit, Dr. Olsson was made an honorary member of the prestigious Colégio Brasileiro de Cirurgiões.

Dr. Carl A. Olsson

Drs. Jerry G. Blaivas and **Carl A. Olsson** recently directed a symposium on "Current Controversies in Neurourology" at a meeting of the American Urological Association in Atlanta.

Dr. Harris M. Nagler has won first prize for his contribution to research in reproductive biology in the American Fertility Society's International Competition. His winning essay was entitled "Effects of Testicular Torsion on the Contralateral Testis."

The American Academy of Medicine has awarded **Dr. Mitchell C. Benson** the Ferdinand C. Valentine Fellowship, a $25,000 award which Dr. Benson will use to study cell cloning in prostate cancer.

PSYCHIATRY: **Dr. Richard A. Gardner** has published a new book for children entitled *The Boys and Girls Book About Stepfamilies*.

Dr. Robert L. Spitzer recently received the Institute of Pennsylvania Hospital Award for creating a diagnostic and statistical manual of mental disorders.

DENTISTRY: **Dr. Wesley Halpert** has been elected president of the American Academy of Implant Dentistry for the current academic year.

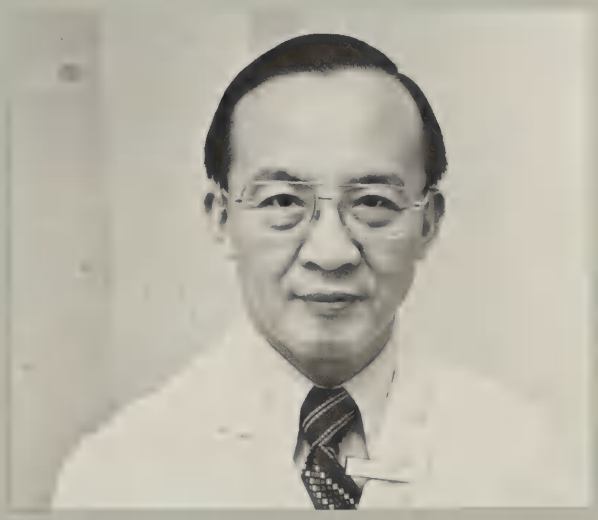
Dr. Louis I. Rubins has been awarded a fellowship in the American College of Dentistry.

Dr. Michael Z. Marder has co-authored *The Physicians' Guide to Diseases of the Oral Cavity*, a clinical atlas that emphasizes diagnosis of potentially harmful conditions.

MEDICINE: **Dr. I. Bernard Weinstein** recently delivered several lectures on carcinogens and cancer prevention. Speaking engagements included: the Louise Harris Weissberger honorary lecture at the University of Rochester; The Bristol-Myers Symposium on Cancer Research at Johns Hopkins University; the NATO conference on carcinogens in Italy; and the Princess Takamatsu Cancer Research Symposium in Tokyo.

NURSING: **Anne Kellett, R.N.**, has been elected president of the New Jersey Board of Nursing. Prior to her recent appointment, Ms. Kellett was the secretary-treasurer of the New Jersey Board of Nursing and served as a member of the Practice and Standards Committee of the National Council of State Boards of Nursing which developed the Model Nurse Practice Act.

PHYSIOLOGY: **Dr. Shu Chien** has become the first recipient of the Fahraeus Medal, the highest honor for research in hemorrheology, (the new science of blood flow). The medal was awarded for Dr. Chien's application of hemorrheological knowledge to clinical low blood flow states such as myocardial infarction, shock, stroke, high blood pressure and sickle cell anemia. "Our research has concentrated on understanding the properties of viscosity and red cell deformability, and on the application of such knowledge to the understanding of pathophysiology in disease," said Dr. Chien, who may be the first researcher to use ultra fine filters to simulate the way human red blood cells travel through the smallest capillaries.



Dr. Shu Chien

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STETHOSCOPE

NEWS OF COLUMBIA-PRESBYTERIAN MEDICAL CENTER

RECONSTRUCTING LIVES WITH PLASTIC SURGERY

RESTORING A HAND ... AND A CAREER
CHANGES IN HEALTH CARE FINANCING
DIAGNOSING HEART ATTACKS WITH ENZYMES

STETHOSCOPE

MAY, 1982
VOLUME XXXVII N° 3

A BIMONTHLY PUBLICATION
OF PRESBYTERIAN HOSPITAL

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ON THE COVER: Dr. Ivo Janecka pauses for a moment during a muscle transplant operation which he estimates has been performed as such only twice before in medical history.

RECONSTRUCTING LIVES WITH PLASTIC SURGERY

Nerves, the sinuous white fibers that transmit messages from the outside world to our brains, the fibers that allow us to feel and to move, had died in large areas of a young man's face. Afflicted by a rare, life-threatening fungal infection, Andrew Bardkowski, 23, had lost all sensation and movement in his cheeks. As a result his face was expressionless and still.

Andrew's illness, and the extraordinary measures taken to reverse its devastating effects, represents one of hundreds of clinical situations in which plastic surgery has played a crucial role in treatment.

Each year hundreds of thousands of Americans undergo some form of plastic surgery. For example, approximately 150,000 operations were performed in 1981 to repair damaged or injured hands, one of the most common reconstructive procedures, while

Aided by high magnification and needles almost invisible to the naked eye, Dr. Ivo Janecka sutures nerve filaments to return feeling to a transplated muscle.

A non-essential muscle from the patient's left leg is removed and transplanted to the right cheek.

breast enlargement, the most common cosmetic procedure, accounted for about half that amount or 72,000 operations. Even more significant are the many reconstructive procedures now available following cancer surgery, which, in total, represent the largest category of plastic surgery cases. Countless thousands of other operations are performed each year to remedy birth defects, and to reverse the effects of accidents and burns, as well as to alter abnormal sexual characteristics.

Dr. Francis Symonds, acting director of Presbyterian Hospital's Division of Plastic Surgery, estimates that approximately 850 plastic surgery procedures are performed each year at PH. "The procedures range from cosmetic surgery such as face lifts and nose reconstructions to extremely complex operations involving the removal of skull base tumors or the transplantation of muscles," he says.

MUSCLE TRANSPLANTS— SURGERY TO SMILE ABOUT

Andrew Bardkowski's ordeal started with a small, black blister that developed on his palate about three years ago. The blister, actually an area of collapsed blood vessels in which a fungus was growing, spread to the nerves and muscles in his cheeks. The illness, mucor mycosis, is a fungal infection which usually strikes diabetics (like Andrew) and transplant patients. In Andrew's case injections of ampho-

Highly flexible silicon sacs have greatly facilitated breast reconstruction.

tericin-B, an agent which has boosted the survival rate among mucor mycosis patients from fifty percent to seventy percent, succeeded in killing the fungus.

Repairing the damage caused by the fungus required far more complex steps—steps that included removing the diseased muscle from the right cheek and replacing it with a non-essential muscle from the patient's left leg; then removing a non-essential nerve from the tongue to connect the motor nerve leading from the brain to a nerve in the transplanted muscle and finally connecting the artery and vein in the transplanted muscle to their counterparts in Andrew's face.

Although it already has been several months since the operation took place, it will be much longer before it is possible to tell whether it will be fully successful. But PH's director of facial nerve microsurgery, Dr. Ivo Janecka, who performed the nine hour plastic surgery marathon, is optimistic. "Sensation is returning to Andrew's cheek. He is slowly learning to use the new muscle. It won't be long before he is able to smile again," says Dr. Janecka.

If all goes well, the operation, which Dr. Janecka estimates has been performed as such only twice before, will be repeated in a few months to restore Andrew's left cheek.

BREAST RECONSTRUCTION— MORE SUCCESSFUL THAN EVER

As is the case in muscle transplant operations, breast reconstruction operations following mastectomy at PH rely on a concept which only about ten years ago was considered revolutionary: shifting not only the skin, but the underlying muscle, complete with blood supply and nerves, to another location. In breast reconstruction, however, as well as in numerous other reconstruction procedures following cancer surgery, tissues are not transplanted, but remain attached to crucial blood vessels and nerves. Tissues are then swiveled to cover a new area.

"The concept of a musculo-cutaneous flap," says Dr. Symonds, "was a major breakthrough in plastic surgery. It developed following the realization a few years ago that the skin's blood supply is not dependent on surrounding skin, but on the underlying muscle.

"Along with the development of microsurgical instrumentation and techniques," adds Dr. Symonds, "the idea of transporting a muscle, complete with blood supply and nerve, revolutionized our field. It meant that an adequate quantity of tissue could be made available from an adjoining, but less important area, such as the back." At Presbyterian Hospital the first operation involving a musculo-cutaneous flap used for reconstruction was performed by Dr. Janecka in early 1970. Dr. Janecka has since used this technique in over 75 other cases.

At Presbyterian Hospital's Plastic Surgery Service, between 50 and 75 patients a year undergo breast reconstruction following cancer surgery. "Reconstruction is usually performed as a separate procedure or, in selected cases, immediately following mastectomy," says Dr. Janecka, who performed the first series of immediate breast reconstructions at Presbyterian. He points out that present reconstructive methods offer a potential for breast reconstruction even in patients who have had radical mastectomies.

Usually lasting about three hours, the reconstructive procedure goes a long way toward restoring a normal appearance and rebuilding the patient's self-image.

"Mastectomy is, understandably, a traumatic event for any woman," says Dr. Symonds.

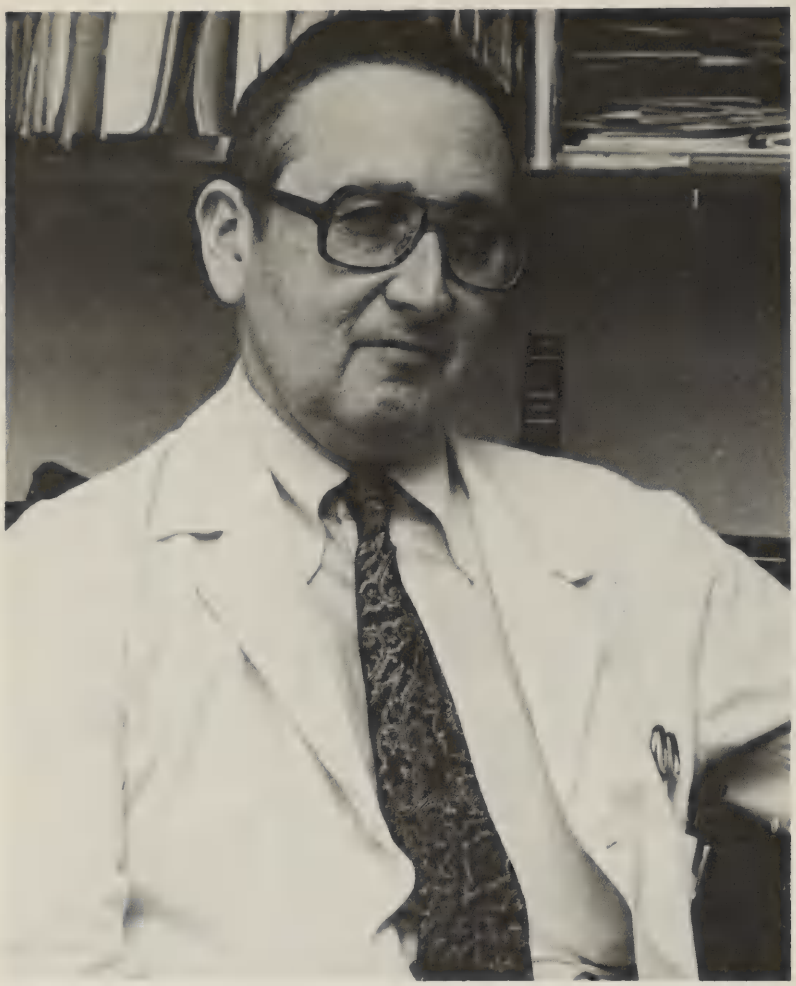
"But if a woman knows she can have successful reconstruction, the initial surgery will be less upsetting. In most cases we are able to restore the new breast to almost the identical size and shape as the unaffected breast."

Dr. Symonds adds that breast reconstruction has been greatly facilitated in recent years by the development of highly flexible silicon sacs which can easily be implanted to give the new breast appropriate size, shape and consistency. "Because more women are aware of the positive results of reconstruction," says Dr. Symonds, "more women may be undergoing surgery earlier and therefore improving their chances of long-term survival."

PLASTIC SURGERY THAT IMPROVES APPEARANCE AND FUNCTION

Matthew was a normal, healthy child in every way but one: he had been born with only one external ear. Beneath the skin on the left side of his head was a normal inner ear, but his hearing on that side was reduced since his middle ear and external ear had not formed. Matthew's condition, microtia, is a birth defect which affects about one in every 6000 babies. His treatment is a prime example of what plastic surgery can do to restore appearance.

"Microtia can be successfully corrected through a series of procedures," says Dr. Bard Cosman, who has performed 38 of the rare operations and is credited with refining some of the techniques involved. Dr. Cosman explains that the first operation involves removing several pieces of cartilage from the ribs (where they quickly



Dr. Bard Cosman

Child with left cleft lip and palate before and after surgery. Photographs courtesy of Dr. Bard Cosman.

grow back), and carving them into the shape of an ear. "We usually do this when the patient is about five years of age because at that point the normal ear has already attained its full size and we can match the carved cartilage to the normal ear," explains Dr. Cosman. "The cartilage is implanted beneath the skin over the inner ear where it gradually develops its own blood supply. In later operations we raise the ear away from the side of the head, refine its shape, and adjust its position relative to the normal ear. The match between the normal and reconstructed ear can be quite good, and hearing is not a problem."

Two other birth defects which often require extensive plastic surgery are cleft lips and cleft palates. The conditions are not only disfiguring, but can seriously stunt speech acquisition if left untreated.

"Surgery usually takes place about three months after birth," says Dr. Cosman, who has successfully treated several hundred children with these conditions in the special clinic provided by Presbyterian Hospital. "The first procedure closes the lip so that it no longer opens into the nose. The nose itself is reshaped so that the nostril is no longer spread out. At about one year of age we close the palate opening so that speech muscles can be used. Three or four years later we improve the orientation of the lip and nose and arrange for the child to have speech training here at the Hospital."

Dr. Cosman comments that 75 to 80 percent of these children develop normal speech. "But in some cases further help is required," says Dr. Cosman. "At age 8 or 9 we may have to attach a piece of tissue (pharyngeal flap) from the back of the throat to the palate to improve speech, and in many cases we make a final improvement in lip scars and nasal appearance during adolescence."

LIGHTENING PORT WINE STAINS

Not all plastic surgery depends on scalpels and sutures. Port wine stains, congenital blood vessel tumors which can cover large patches of skin, can be successfully lightened using a laser.

"The hemoglobin pigment in the red cells of port wine stain blood vessels absorbs laser light and transforms the light into heat while the outer skin remains unaffected," explains Dr. Cosman, who has used an argon laser to treat some 300 port wine stain patients in PH's Polly Annenberg Levee Laser Facility over the last five years. "It's like burning tissue from the inside out," he says. "The laser light causes the blood vessels to clot, and this leads to their eventual obliteration as fibrous tissue grows into the clots. We've had good results with seventy percent of our patients."

RESTORING A HAND ... AND A CAREER

Charles Stucklen

These days, Charles Stucklen, 21, is working out on a golf course in Key Biscayne and earning a living as a professional golfer. But late last summer Charles was afraid he would never swing another club.

When a friend accidentally slammed a glass door on Charles's right hand, seven tendons and the major nerve at his wrist were severed. Rushed from his mother's Long Island home to a local hospital, Charles first underwent emergency treatment to control his bleeding. But Charles's hand was nearly lifeless. "I had no sensation in the thumb, index and middle fingers and only a little sensation in my ring finger," he recalls.

The day after the accident Charles was referred to Dr. Mary H. McGrath, attending in Plastic and Reconstructive Surgery at Presbyterian Hospital.

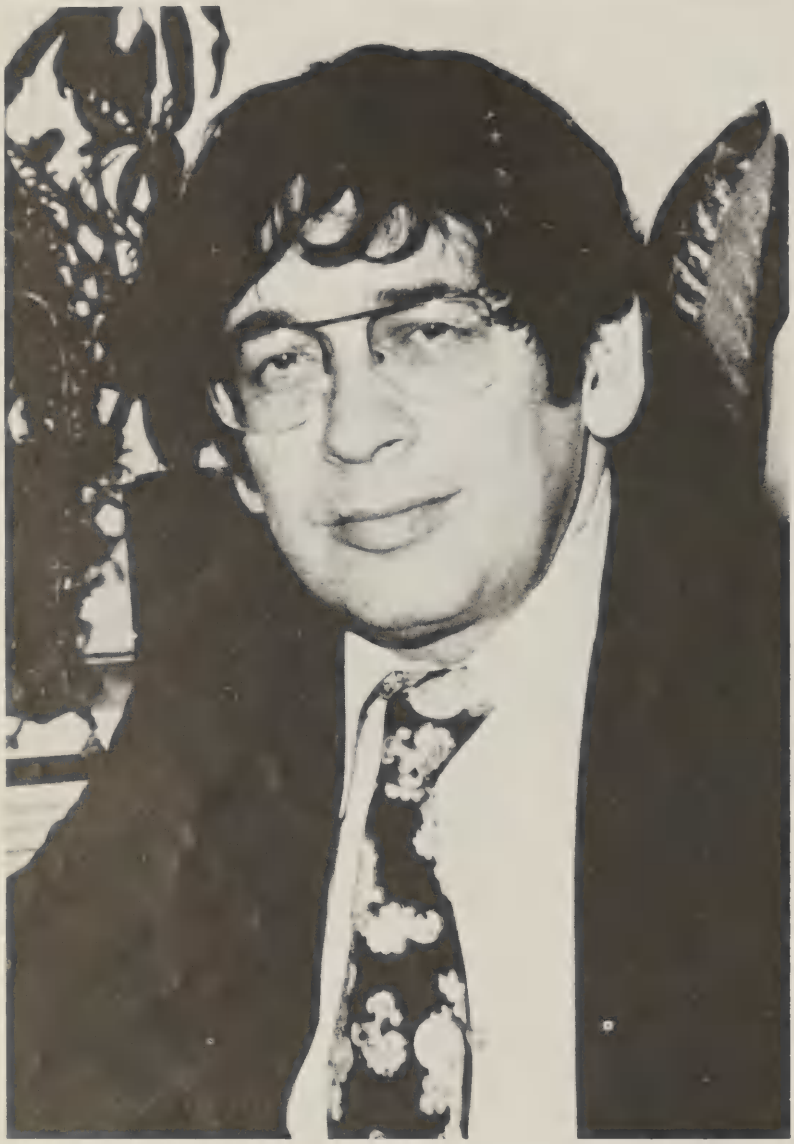
"For Charles, this injury was devastating," says Dr. McGrath. "Without microsurgery to repair the nerve and tendons, he would have been unable to close his fingers and much of his hand would have been numb – the ultimate handicap for a golfer."

Among plastic surgical procedures, operations on the hands are quite common. Trauma, including burns, congenital deformities and degenerative diseases such as rheumatoid arthritis, account for up to ninety percent of these operations. Tumors are less common. "After the face, the hand is the most expressive part of the human body. It is also by far the most sensitive part," says Dr. McGrath. "Restoring the hand to normal condition is of enormous significance to the patient."

For Charles Stucklen the surgery performed by Dr. McGrath made all the difference in the world. After a month, the cast was removed and he began exercising his hand. "At first my hand was weak and sore. I started lifting weights, playing basketball, squeezing putty. The more I exercised, the better I got," says Charles. "When I started out I had no grip. Now I have no trouble swinging a club. Sensation is coming back to my fingers. Dr. McGrath was terrific. She told me she could repair my hand and she did."

In 1979, Charles won the New York State title in the All-American Prep National Golf Championships and was ranked tenth nationally among amateur golfers. He has won almost all the major junior championships in the New York area. This year he is turning pro and plans to try for the U.S. Open.

CHANGES IN HEALTH CARE FINANCING — WILL THEY REDUCE COSTS OR LIMIT SERVICES?



Congressman Ted Weiss

President Reagan has presented an economic package to the nation which includes increases in Medicare deductibles; a reduction of the maximum level that hospitals can be reimbursed by Medicare for inpatient services; and the conversion of funding for 4 health-related programs into a single block grant.

Although the Reagan program is ostensibly designed to slow the rate of increase in health care costs, Congressman Ted Weiss, representing over 450,000 New Yorkers from Riverdale to 11th Street, says the program will put excessive financial strain on millions of Americans while forcing health care institutions to curtail services or face severe financial stress.

Conversely, Dr. Bernard Kilbourn, regional director for the Department of Health and Human Services (DHHS), says that consumers will be affected positively by the Administration's new health care initiatives, primarily through a pro-competition approach.

In recent interviews, both Congressman Weiss and Dr. Kilbourn stated their views regarding the effects of Reagan's programs as they relate to health care:

How will Medicare beneficiaries be affected by the Administration's program?

Congressman Weiss: "At the beginning of this year, the deductible for Medicare patients will rise from $228 to $260. The deductible is expected to be increased to $292 in fiscal 1983, and to $328 in 1984. Those figures apply to hospitalization costs. The deductible for physicians' services covered under Part B of Medicare will increase from $60 to $75 in 1982. These increases may not seem like much to many people, but to those who are already on the edge, they may in some cases put medical assistance out of reach."

Dr. Kilbourn: "The Administration and the DHHS are exploring ways to improve Medicare, such as increasing catastrophic illness coverage, and offering beneficiaries the opportunity to enroll in private health plans.

"Close to 10 percent of the GNP in 1980 was spent on health care. The Administration believes that competition in the health care market will help reduce this spending level. A pro-competition approach would mean that consumers would have several insurance options, each with different levels and types of coverage, so that they could make cost-conscious choices about using health care services.

"Logically, the delivery systems for these services would be induced to market health care plans that would provide the most benefits at the lowest cost."

What's in store for Medicaid recipients?

Congressman Weiss: "Over 18 million people, including more than 8 million children, received Medicaid benefits in fiscal 1981. The federal government has reduced by three percent the

Medicaid payments it will make to the States in fiscal 1982. Another 4 percent will be cut in 1983, and 4.5 percent in 1984. Exactly how and where the States will cut is still unknown. But the result will be either reduced services or higher costs. It's possible, however, that New York State may be exempt from some of these cuts."

Dr. Kilbourn: "The DHHS is studying several reforms for the Medicaid program, including: competitive bidding for lab services and medical devices; the development of new reimbursement systems for hospitals; payments for home and community health care as an alternative to inpatient care; better target services for the medically needy; and a voucher system which would allow Medicare and Medicaid beneficiaries to receive benefits and enroll in private insurance plans or alternative health care systems."

What about programs like Emergency Medical Services, Hypertension Control and Hemophilia Control?

Congressman Weiss: "There are 19 such programs which are currently being turned over to the states. All of these programs will be funded by a single block grant. But the total funding is 25 percent less than the 19 programs would have received under the Carter Administration. The states will have the responsibility of deciding to what extent each program should be funded.

"I think there's tremendous potential for turning the clock back under this system. We're talking about dismantling a system that took years to create."

Dr. Kilbourn: "This is a perfect example of why block grants are so logical. They provide flexibility to the states to allocate resources to most effectively meet their individual health needs.

"States are required to be moderate, however, and allocate a reasonable proportion to existing programs."

How will hospitals be affected by all this?

Congressman Weiss: "Many of these programs are preventive in nature. I think we'll see a gradual increase in health problems over the next few years. Hospitals will be hit with treating more seriously ill poor people just when they can least afford to. Some hospitals may be forced to close."

Dr. Bernard Kilbourn

Dr. Kilbourn: "Being aware that these changes may impact hospitals, the DHHS has set up a task force, based in Washington D.C., which is currently examining the needs and concerns of health care institutions as they relate to the new economic policies."

What can citizens do to voice their approval or concern with the Administration's health care policy?

Both Congressman Weiss and Dr. Kilbourn recommended that concerned citizens write the President and their elected officials.

SPECIAL CLINIC SCREENS FOR LEAD POISONING

A young patient receives calcium disodium EDTA. The agent binds to lead in the blood to form molecules which are quickly excreted.

Barbara Cirella, nurse practitioner, with blood testing device.

For several months three-year-old Christina had been unusually lethargic. But her parents did not know that Christina's lack of energy and frequent stomach aches were anything to worry about until they brought her to Presbyterian Hospital for a routine physical examination. Since Christina was under six, the examination included an EP test (erythrocyte protoporphyrin)—a simple blood test which can indicate either an iron deficiency or lead poisoning. Christina's unusually high score on the test prompted her doctor to order a further test to check specifically for lead in her blood.

As a result of environmental pollutants (mostly from automobile emissions), most people have 10 to 15 micrograms of lead per 100 milliliters of blood. At over 65 micrograms, Christina's blood clearly indicated a case of lead poisoning, probably due to eating lead-based paint chips.

Christina is one of 100 children tested each week for lead poisoning in the Pediatric Clinic of Presbyterian Hospital. She is part of a vigorous testing program, which even includes free tests at nearby shopping centers.

Once a child is identified as having lead poisoning, PH's special Lead Screening Clinic takes over. Parents are initially asked to bring their children to the clinic for one hour per day for five days.

Dr. Steven Selbst, pediatrician in charge of the Clinic, explains that treatment is based on regular infusions of calcium disodium EDTA. "This agent binds to lead in the blood to form molecules which are quickly excreted," explains Dr. Selbst. "Repeated treatment gradually reduces lead levels. Treatment can be discontinued when the patient's urine is almost completely free of lead. Even so, we recommend regular follow-up visits."

PH's Lead Screening Clinic is administered by the Division of Pediatric Hematology, Babies Hospital, which is directed by Dr. Sergio Piomelli. In addition to Dr. Selbst, the clinic has two nurse practitioners, Barbara Cirella and Dolores Jackson, as well as a part time social worker, Sandra Abrams.

"The Clinic's social worker plays an important role," says Dena Fisher, director of Social Work Services at PH. "It's up to her to provide psycho-social evaluations of patients and their families, including counseling, advocacy and referrals for community services." She adds that the social worker in some cases may arrange for the city to check for lead paint in the patient's apartment.

DIAGNOSING HEART ATTACKS WITH ENZYMES

Dr. Michael Pesce (standing) with technologist David Rubinstein. About 5000 blood tests for heart enzyme are given at PH each year.

When Mr. Williams was rushed to Presbyterian Hospital with severe chest pains, all indications pointed to a heart attack. The widowed father of two teenagers, Mr. Williams was at least as worried about how his children would manage if he were to die as he was about his own health.

But Mr. Williams did not have to worry for long. Thanks to a routine test given to all cardiac patients at Presbyterian Hospital, Mr. Williams learned that he had not suffered a heart attack after all.

"Several different conditions can produce symptoms indicative of a heart attack," says Dr. Michael Pesce, director of PH's Special and Microchemistry Laboratories. He explains that angina pectoris, with its severe chest pains, is the most common of these. Certain kinds of injuries can also produce similar effects.

How do doctors find out if a patient has indeed suffered a heart attack? Since the 1950's, doctors have known that the cells in muscle tissues, including heart muscle, discharge an enzyme, creatine kinase, (CK) when injured. The presence of a certain level of the enzyme in blood was known to be an indication of muscle injury, though not necessarily of heart muscle injury.

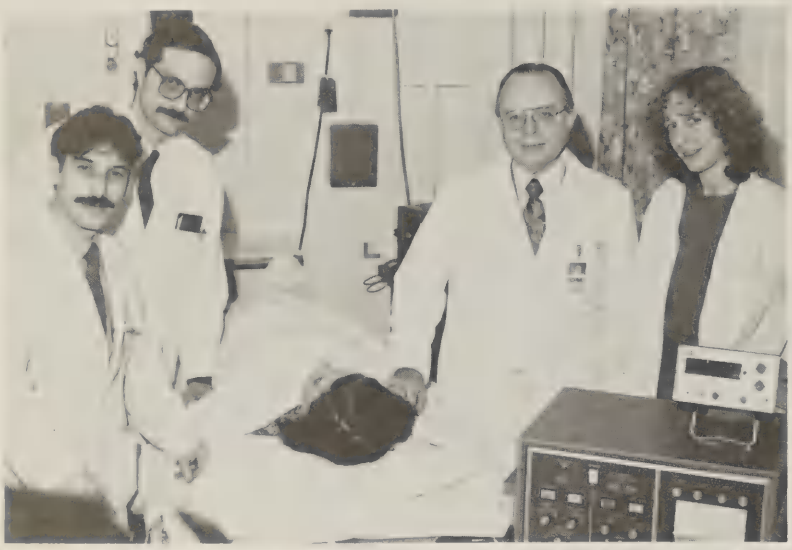
In recent years, however, three different types of CK have been identified. One type (CK-MB) achieves its highest concentrations in heart muscle cells. During a heart attack, heart cells die, discharging their contents into the bloodstream. Within hours of an attack, the level of CK-MB in the blood rises, specifically indicating injury to the heart muscle.

But ascertaining these levels requires a complex test. "The present technique calls for a specially trained technician and about 2 ½ hours of intricate lab work," says Dr. Pesce.

Dr. Pesce points out, however, that a new, semi-automated version of the test is now being studied at CPMC and will probably become available to patients this fall. "The new test will mean that we will be able to provide this service much more easily," says Dr. Pesce.

For Mr. Williams and for many of the millions of other Americans who are hit with symptoms of a heart attack each year, the CK-MB test and any improvements in its availability are good news. "If you've really had a heart attack, it's good to know for sure, so you can take the proper precautions," says Mr. Williams, whose diagnosis was angina. "But if you haven't had a heart attack, that's awfully good to know too."

ECT — Safer Than Antidepressant Medication?



From left: Dr. Harold Sackeim, Dr. Paulo Decina, Dr. Sidney Malitz, and Nancy Hopkins, R.N.

Electroconvulsive therapy or ECT has had a controversial history. Although it is known that ECT is perhaps the most effective treatment available for some types of depression, there has been considerable public debate about its use.

Although a large number of improvements have taken place over the years so that ECT now causes little or no discomfort to the patient, the question as to its effects on memory and other cognitive functions has persisted.

Recently, however, an innovative project aimed at answering this question has been initiated at the Columbia-Presbyterian Medical Center. The project is directed by Dr. Sidney Malitz, acting director of Psychiatry at the Medical Center, and Dr. Harold A. Sackeim. As Dr. Malitz explains, "We have known for some time that the therapeutic effects of ECT are tied to eliciting a seizure in the brain. The effects of ECT on cognitive functioning are related to the amount of electrical energy given during treatment. By determining the minimal dose necessary for each patient, we have found that strong therapeutic effects are obtained using doses often ten times less than what is given in standard ECT."

Does this change have any impact on cognitive functioning? Dr. Sackeim comments, "We have observed marked differences with this new form of ECT. A minute or two after the induced seizure most patients are fully oriented and aware, and they can remember information that was presented to them just before treatment."

Dr. Sackeim adds that the promise of this new ECT method appears to be that it is therapeutically effective, and that in many respects it is medically safer than antidepressant medication.

Hattie Alexander Memorial Lecture Highlights Alumni Day at CPMC

The 44th Annual Babies Hospital Alumni Meeting was held on April 30. On the same day Dr. David H. Smith, professor and chairman of the Department of Pediatrics, University of Rochester, presented the Hattie Alexander Memorial Lecture. Dr. Smith spoke on "Prospects of Preventing *Hemophilus influenzae* Infections." The discussion was followed by a luncheon and business meeting in Harkness Hall.

Research Human Milk Bank Opens at Medical Center

The Columbia-Presbyterian Medical Center recently opened a human milk bank as a part of a major research program which will explore the role of human milk in the nutritional management of premature infants.

Construction of the milk bank, which is located in the Babies Hospital unit of Presbyterian Hospital was funded, in part, by a $22,000 grant from the March of Dimes Birth Defects Foundation. The research program of which it is a part is supported by a $1.5 million grant to Columbia University from the National Institutes of Health. The new milk bank is under the direction of Dr. Emi Okamoto. Dr. William C. Heird is the principal investigator.

Planning Director Speaks At GNYHA's Annual Meeting

The Greater New York Hospital Association's annual meeting was held Thursday, April 29, at Lenox Hill Hospital. The program featured David Ginsberg, director of the Office of Planning at Presbyterian Hospital, who discussed "The Strategic Planning Process for the Urban Hospital: An Argument for Change."

CPMC To Open Sickle Cell Center

A Comprehensive Sickle Cell Center is soon to be headquartered at the Columbia-Presbyterian Medical Center. One of only ten such units in the U.S., the Center will be formally opened in April, 1983.

The Center will offer prenatal diagnosis, genetic counseling and population-based screening, as well as patient care in specialized clinics. It will also foster the education of health professionals, community organizations and individuals and oversee a substantial number of research projects directed at earlier detection, improved treatment, or greater knowledge of disease mechanisms.

According to Dr. Sergio Piomelli, director of Pediatric Hematology and Oncology and director of the new Center, between thirty to thirty-five investigators and clinicians from a wide range of specialties will work on the Center's projects.

"This is an attempt to use our expertise and talent to fulfill a specialized community need," said Dr. Piomelli, referring to the high incidence of sickle cell disease in the area served by Presbyterian Hospital. "The research is scientifically important but we are also focusing on a real and immediate problem of our constituencies."

Dr. Sergio Piomelli, director of the Sickle Cell Center, with one of the Center's young patients.

Sickle cell disease affects one in 500 black people in the United States. Although the first clinical signs do not generally appear until five or six months of age, the disease can be detected at birth or before with proper screening procedures.

The new Sickle Cell Center will be supported by a six million dollar grant awarded to Columbia University by the National Heart, Lung and Blood Institute.

"Nursing in the Eighties" Conference Addresses Recruitment Problems

Dr. Felix E. Demartini, president of Presbyterian Hospital, was one of five panelists who spoke at a conference entitled "Nursing in the Eighties," sponsored by the United Hospital Fund. The conference, which was held on March 15 at the New York Academy of Medicine, addressed itself to issues regarding recruitment and retention of nurses in the New York area. Joining Dr. Demartini in the panel discussion were Alice Fleming, chairperson of the Council of Auxiliary Presidents and Leaders; Madeline A. Bohman, executive director, Bellevue Hospital; Dr. George G. Reader, professor of public health, Cornell University Medical College; and Geil Kahn Weissman, R.N., vice president for nursing, Mount Sinai Hospital.

Nurses Form Pediatric Cardiac Arrest Team

For just over a year Presbyterian Hospital pediatric patients with respiratory or cardiac arrest have been benefitting from the care of a highly specialized group of nurses. "The Pediatric Nursing Arrest Team was organized to provide a standardized, quality nursing response to pediatric cardiac arrests," says Peggy Fisher, R.N. who, along with Nancy Baker, R.N., set up the team. Ms. Fisher adds that "the team approach has alleviated the confusion and anxiety that can occur during an arrest."

In addition to nurses Fisher and Baker, the team includes: Pauline Dragula, R.N., 8-S; Elaine Austin, R.N., 8-S; Ruth Baluyot, R.N., assistant head nurse, 12-N; Ester Harry, R.N., 9-18; Ellen Janowsky, R.N., 9-18; Margaret Kelly, LPN, CRC; Shawn Boyle, LPN, 11-S; Elizabeth Powers, R.N., assistant head nurse, 2 ICU; Carol Hertenstein, R.N., Babies Nursing Office; Meg Halloran, R.N., 9-N; and Betsey Tirado, LPN, 9-S.

Each Month Musicians Emergency Fund Brings Song to Presbyterian Hospital

From left, Dr. Michael Katz, director of the Pediatric Service, musician Nancy Montgomery, and MEF executive director Edmée Slocum.
Photo: Augie Fernandez

Should you travel through the Hospital and hear patients singing along, clapping their hands, or even occasionally dancing in the aisles, chances are it's because an artist from the Musicians Emergency Fund is visiting their unit.

MEF, which has provided over 50 years of service in the New York area, arranges for talented musicians to peform for patients of all ages. During the past year, MEF artists have brought their vocal and instrumental gifts each month to various units at Presbyterian Hospital.

Recently Mrs. Edmée Slocum, executive director of MEF, visited the Hospital during a performance by guitarist/singer Nancy Montgomery in the Babies Hospital playroom. In attendance were many music aficionados, including Dr. Michael Katz, director of the Pediatric Service and a long-time supporter of the organization.

Twenty-One Years of Generosity

Since 1960, when the Fight for Sight Children's Eye Clinic was first established at Presbyterian Hospital by Fight for Sight, Inc., the clinic has received $390,000 from the organization which founded it. The clinic features a waiting room designed to look like a playroom, with coloring books, toys, games and magazines to help relieve the anxieties of young patients and keep them occupied while they are waiting to be examined.

Over the years Fight for Sight, Inc., has also funded grants in aide, post-doctoral fellowships and student fellowships at CPMC for a total of $360,000.

Most recently, Fight for Sight gave $4,000 to Dr. Jung J. Lim to study "Pre-Steady State Isotope Flux Measurement Across the Corneal Endothelium," and Drs. Herman D. Schubert and Laszlo Bito were awarded $9,167 to study "Ocular Inflammation: Its Mediators and Effect on Ocular Tissues." The organization also awarded $17,287 to the Children's Eye Clinic to help defray annual maintenance costs. During 1981, Fight for Sight, Inc. provided funds to help defray clinic fees for children who are not covered by Medicaid or third party support.

Closely associated with the Clinic are Dr. Howard M. Eggers, Clinic director, Sally Moore, chief orthoptist, and Pat Falahee, secretary. Dr. Charles A. Perera, retired clinical professor of ophthalmology and consultant on the Ophthalmology Service, is chairman of the Fight for Sight, Inc. Scientific Advisory Committee. Other members of this Committee are Dr. Charles J. Campbell and Dr. Abraham Spector.

Ideas Flow at Neighborhood Conference

City Council President Carol Bellamy, State Senator Franz S. Leichter, and David Ginsberg, director of PH's Office of Planning, spoke at the fourth annual conference of the J. Hood Wright Park Neighborhood Association on "Improving City Services," held at PH's Maxwell Hall on February 6. Topics of discussion included health care and hospitals, law enforcement, transportation, sanitation and housing.

PLASTIC SURGERY: In mid 1981 **Dr. Ivo Janecka** was appointed to the Presidential Task Force, an organization designed to provide the Government with ideas and suggestions from non-government sources regarding a broad range of proposed policies. He is one of only about six physicians across the U.S. to receive the prestigious appointment. In connection with his position on the Task Force, Dr. Janecka has been studying ways of simplifying the delivery of medical care; he is also working on a proposal aimed at improving financial support for students. Most recently, Dr. Janecka received an acknowledgment from the Task Force which mentioned his "extraordinary commitment and unselfish dedication in joining with President Ronald Reagan to form the Republican Presidential Task Force."

ORTHOPEDIC SURGERY: **Dr. Frank Stinchfield** and **Dr. Nas Eftekhar** recently gave papers at the National Institutes of Health Consensus Development Conference on Total Hip Joint Replacement. Dr. Stinchfield spoke on "Institutional Considerations—Facilities, Staffing, Training," while Dr. Eftekhar discussed "Short Term Outcome and Immediate Postoperative Course after Total Hip Replacement." It is estimated that approximately 75,000 total hip replacements are performed each year on some 65,000 Americans.

Dr. Hugo A. Keim is the author of two new books: *The Adolescent Spine*; and *How to Care for Your Back.* With contributions by PH doctors **John E. Denton, Harold M. Dick, James G. McMurtry III,** and **David P. Roye, Jr.,** *The Adolescent Spine* offers detailed discussions of the congenital problems, infections, traumas and tumors which may affect the spine. "In How to Care for Your Back," says the jacket, Dr. Keim "tells how to correct the three most common causes of back problems—stress, improper diet, and lack of exercise—and presents a special list of Dos and Don'ts for spinal health."

Retirement

Gerry Walker, left, enjoys one of many warm moments with Hospital President Dr. Felix E. Demartini during a retirement party given in his honor. An employee of Presbyterian Hospital for 36½ years, Mr. Walker has worked (to name a few positions) as a unit manager, assistant director of Purchasing, director of Purchasing, director of Materials Management, and most recently as director of Capital Equipment Budgets.

PSYCHIATRY: **Dr. David V. Forrest** is the author of a unique glossary of common American slang expressions. The glossary, just out in its third edition, was designed to help foreign-born physicians and other health workers to better understand their patients. The new book is entitled *Selected Expressions for the Foreign-Born Psychiatrist and Other Professionals.*

PEDIATRIC CARDIOLOGY: **Dr. Welton M. Gersony** has been elected Chairman of the Sub Board of Pediatric Cardiology of the American Board of Pediatrics for 1981-1982. Most recently, he outlined the cardiovascular section for Nelson's *Pediatrics.*

RADIOLOGY: **Dr. William B. Seaman** recently became the James Picker Professor of Radiology, Columbia University's first named professor of Radiology. This honor was made possible by a $1 million gift from the James Picker Foundation.

NURSING: **Margaret Hawthorne,** '27, who gave her entire nursing life to the care of patients in Presbyterian Hospital's Metabolic Unit, recently passed away. Miss Hawthorne worked under the supervision of Drs. H. Rowle Geyelin, founder of the Metabolic Unit, and Robert F. Loeb.

NEUROLOGY: **Dr. Richard Masland** has been appointed President of the World Federation of Neurology. The organization, which elects a new president every four years, sponsors the World Congress of Neurology, a large number of regional conferences, as well as a number of research groups. **Dr. Masland** is also Secretary of Epilepsy International.

Mr. Henry C. Loughmiller, the creator of the Presbyterian Hospital insignia, died on March 17. He was 94 years old.

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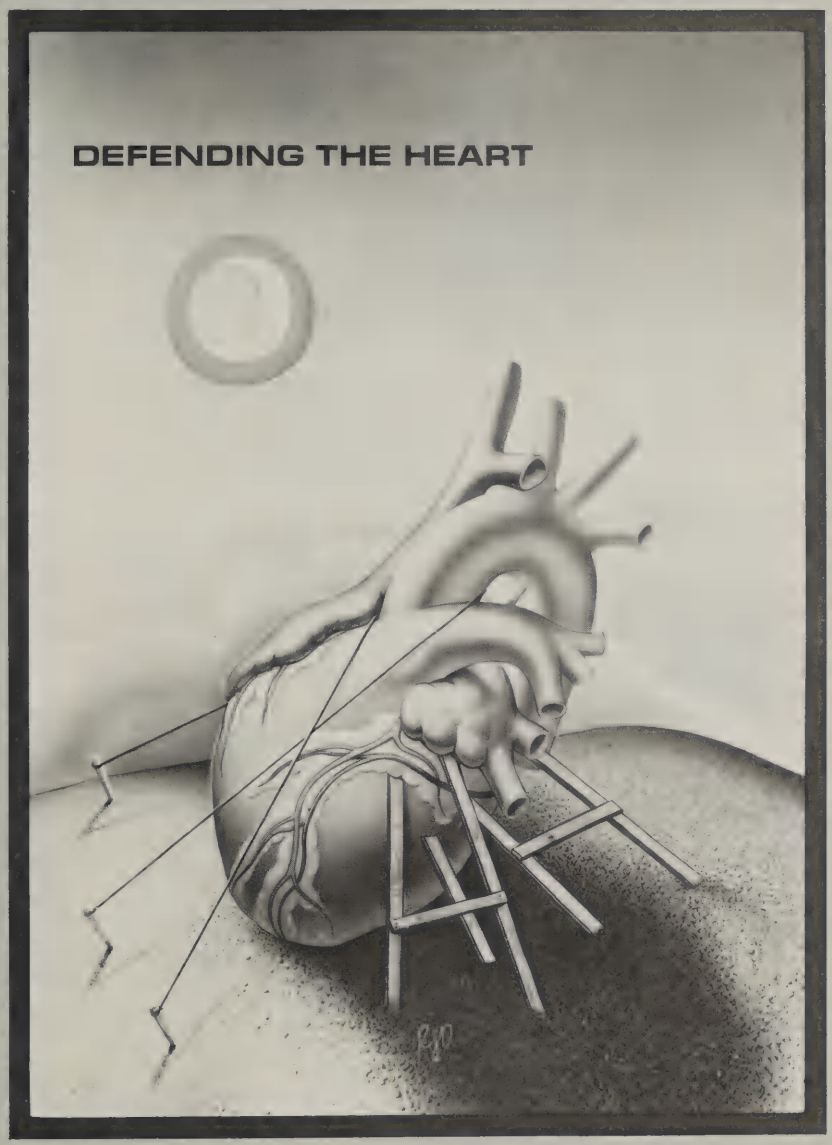
NEWS OF COLUMBIA-PRESBYTERIAN MEDICAL CENTER



SONAR MAPPING AND HEART ASSIST DEVICES
TRANSFUSIONS BEFORE BIRTH
CONTROLLING RAGE OUTBURSTS WITH DRUGS

JULY, 1982

37 N4

STETHOSCOPE

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IMPORTANT NOTICE TO OUR READERS

You are invited to participate in Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity or unitrust, life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

DEFENDING THE HEART

Between the lungs, beneath the fifth and sixth ribs, about one-and-a-half inches behind the left nipple, weighing ten to twelve ounces in the average male and eight to ten ounces in the average female, the adult heart pumps about nine pints of blood per minute through a sixty-thousand mile network of vessels.

Not only the center of life, the heart is also at the center of a revolution highlighted by striking advances in surgical procedures, new drugs and blossoming technologies. Yet, in spite of rapid progress—progress which has helped reduce the death rate from heart disease by 25 percent since 1970—heart disease remains the nation's number one killer.

"Heart problems range from blockages in major vessels, to angina, to abnormal rhythms (arrhythmias), to a wide variety of congenital defects," says Dr. James Malm, chief of cardiovascular surgery at Presbyterian Hospital. He estimates that between 600 and 800 major heart operations are performed at PH each year. About 80 percent of these operations involve either valve replacement or coronary bypass, while the remainder are for correction of congenital defects.

A BRIEF HISTORY

The history of successful cardiac care is relatively short. Open heart surgery, which usually involves stopping the heart while repairs take place, was not possible until the first heart-lung machine was developed in 1953. Three years later, Presbyterian Hospital initiated an open heart program, one of the first in the nation. In the early 1960s pacemakers and artificial heart valves became available, but it was not until the late 1970s that coronary artery bypass surgery, now performed on up to 100,000 Americans each year, first came into use. "In New York State," says Dr. Malm, "demand for cardiac surgery has increased by 15 to 20 percent each year since 1976."

continued on next page

Dr. Wesley Tzall and technician Janet Feder prepare to inject a mildly radioactive liquid into a patient's blood stream. Once in the heart, radiation is detected by a gamma camera and the resulting information is built up to form computer images of heart wall contractions. The technique is used to diagnose and determine treatment for a large number of heart problems.

New drugs are helping patients live longer, more productive lives. If surgery does become necessary, however, cardiac surgeons like Dr. Henry M. Spotnitz (right) and Dr. Eric Rose can correct problems ranging from congenital heart defects to destruction of the heart muscle itself.

Most of the major advances in medical treatment of cardiac problems are similarly recent. Beta-blocking drugs, which have been found to be effective in preventing sudden death in the year after a heart attack, became available only in the late 1960s, while calcium blockers, aimed at relieving the symptoms of angina, became available in the 1980s.

At CPMC, a major area of drug study has been in the treatment of arrhythmias. Considered to be one of the principal centers in the world for the treatment of arrhythmias, CPMC has developed a computer program for analyzing arrhythmia data and is constantly studying new anti-arrhythmic drugs under strict FDA guidelines.

Most recently, members of the cardiovascular clinical pharmacology team at CPMC have discovered that tricyclic antidepressants (a class of drugs used for 20 years in the treatment of emotional disorders) can suppress potentially life-threatening ventricular arrhythmias. "This is a very significant step forward," says Dr. Elsa G.V. Giardina, who has worked closely in this area with Dr. J. Thomas Bigger, Jr., director of Cardiology. Over four million Americans have abnormal heartbeats. Many thousands are already benefitting from these drugs.

DRUG STOPS HEART ATTACKS

Potentially as important as the newfound cardiac application of tricyclics is the very recent discovery that certain naturally occuring substances can dissolve blood clots without causing serious side effects. Each year, up to one-and-a-half million Americans are struck by heart attacks. Most heart attacks are caused by clots in one of the coronary arteries, the arteries that supply the heart muscle itself.

Dr. Melvin Weiss, director of PH's Adult Cardiovascular Laboratory, explains that by injecting streptokinase, a substance derived from bacteria, directly into the area of the clot, the clot can be quickly dissolved during a heart attack.

But over the last twelve months, Dr. Weiss, working closely with Drs. Hymie Nossel, Allen Nichols, Dennis Reison, Eric Powers, John Owen, and Karen Kaplan, has been scrutinizing a kindred substance, urokinase. "Urokinase does not reduce blood pressure, cause airway spasm or fever, as streptokinase sometimes does," says Dr. Weiss. "It's been available for some time now. What's new about what we're doing is that we're delivering it selectively, that is, at the site of the clot. This allows us to use less of the drug. The result is fewer side effects."

Dr. Weiss describes urokinase treatment as "the most exciting therapy we've seen in a long time." He adds: "If a patient can come to the lab relatively quickly after the onset of chest pain, we can dissolve his clot before significant damage to the heart occurs. The therapy decreases the chances of immediate mortality and can improve the patient's long term outlook."

WHEN SURGERY IS THE ONLY ANSWER

Although medical treatment of cardiac problems is preferable to surgery in many cases, it does not always provide an acceptable solution.

Coronary artery disease (hardening of the arteries that supply the heart

muscle) is an area in which surgery is often the only answer. Coronary artery bypass surgery, the most frequently performed heart operation in the United States, involves removing non-essential veins from the legs and attaching them to the coronary arteries to bypass obstructions.

ARRHYTHMIA SURGERY: SAVING A GRANDMOTHER

Another area in which surgery can make a crucial difference is in the treatment of arrhythmias.

For Mrs. Mary Ryblewski, a 63-year-old grandmother from Bloomfield, New Jersey, for instance, even the most powerful drugs failed to correct her irregular heartbeat. Suffering from ventricular tachycardia, a life threatening arrhythmic condition in which the left ventricle of the heart beats too quickly, Mrs. Ryblewski was the first patient at PH ever to undergo open heart surgery to correct this condition.

During the operation, which took place on September 8, 1980, doctors peeled a thin layer of damaged tissue from the inside wall of the patient's heart. The problem area, a scar left by a heart attack, was located during surgery using electrodes on the fingertips of a special surgical glove which had been developed at CPMC. "As soon as the damaged area was removed," reports Dr. Henry Spotnitz, who performed the operation, "Mrs. Ryblewski's heart began beating normally." Mrs. Ryblewski is now feeling well and enjoying her grandchildren.

REPAIRING CONGENITAL HEART DEFECTS

Brian was only a few months old, but already he was a candidate for open heart surgery. Each year, estimates the American Heart Association, 20,000 to 25,000 children are born in the U.S. with one or more of a dozen congenital heart defects. Brian was one of approximately 200 children who have undergone open heart surgery each year at Presbyterian Hospital for these often life-threatening conditions.

Brian's bluish fingernails and lips had prompted his doctor to perform a cardiac catheterization. The test revealed a tetralogy of Fallot, a condition in which a large hole between the ventricles and a narrowing below the pulmonary valve cause unoxygenated blood to be pumped through the circulatory system. "Complete surgical repair of the defects can be accomplished in most instances," says Dr. F.O. Bowman, Jr., attending cardiac surgeon at Presbyterian. "Surgery generally normalizes circulation, and the patient's long-term prognosis is excellent," he adds.

continued on next page

A coronary bypass patient is examined on PH's Surgical Cardiac Intensive Care Unit by staff nurse Cathy McHugh, R.N. Between 600 and 800 major heart operations are performed at PH each year.

A DEVELOPING TRANSPLANT PROGRAM

Between 2000 and 3000 Americans per year cannot be helped by either conventional cardiac surgery or powerful cardiac drugs. For these patients, many of whom suffer from uncontrollable deterioration of the heart muscle itself (idiopathic cardiomyopathy), cardiac transplantation in select situations offers a possible solution.

With a track record of 16 cardiac transplants since 1977, Presbyterian Hospital is one of a very small handful of medical centers with a commitment to cardiac transplantation. "We're planning a major expansion in this area," says assistant attending cardiac surgeon and clinical director of Cardiac Transplantation Dr. Eric Rose. Dr. Rose recently returned here following an extended examination of the Stanford University cardiac transplant program, which is considered to be one of the best.

"We expect to do between 10 to 20 transplants per year in the near future," says Dr. Rose, adding, "We're optimistic about achieving the highest possible long-term survival rate."

CARDIAC INTENSIVE CARE: EXPERTISE AND HIGH TECHNOLOGY

In PH's new Surgical Cardiac Intensive Care Unit (SCICU) expert care is provided around the clock by 28 nurses.

From behind the wide glass partition separating the nurses' station from the patient care area, Rowena Woodley, nursing care clinician on PH's new 17th floor Surgical Cardiac Intensive Care Unit, can see almost all ten beds in the Unit, including the two located in special heart transplant rooms. A bank of television screens gives her a close view of each patient, and a row of monitors allows her to check everything from ECG readings to pulmonary artery pressures at a moment's notice.

Open since February, the SCICU is one of the most modern in the country. "The unit combines the latest in central monitoring with an environment designed to enhance psychological support and comfort for patients and their families," says senior staff nurse Maureen Gallagher.

Typically, patients are brought to the Unit from one of the 18th floor operating rooms by a surgeon and an anesthesiologist. Patients are immediately connected to monitoring devices. A complete assessment is conducted, and a nurse is assigned to each patient.

"Our patients range in age from eight days to 80 years," says Ms. Gallagher, who explains that the unit's 28 highly experienced nurses are responsible for patients' cardiac, respiratory, renal and neurological care.

Eight floors below the SCICU, PH's Medical Cardiac Intensive Care Unit provides around-the-clock care for heart attack patients and for a variety of other emergency cases. The Unit's 21 staff members treat such conditions as myocardial infarctions and arrhythmias, and deal with many non-cardiac emergencies as well. "We're responsible for assessment, monitoring, emergency treatment, and close psychological support of patient and family," says assistant head nurse Barbara Suchak, who has been with the Unit for ten years.

"IT'S DEMANDING, BUT IT'S ALSO SATISFYING."

"In addition to basic nursing education, our nurses must have a year's experience in the medical-surgical area. Like any nurse who works in an ICU, our nurses take a four week course in intensive care nursing and spend six weeks in clinical practice with a preceptor on an ICU," says Ms. Suchak.

She explains that cardiac ICU nurses must be highly familiar with a broad range of drugs and with their side effects. "A drug can change a patient's ECG reading," she says. "You've got to know to what extent the change is appropriate and how long the drug will remain active."

Ms. Suchak emphasizes, however, that more than special training is required. "You've got to be interested in learning, be able to work closely with people, and have plenty of physical and psychological stamina," she says, adding, "It's demanding, but it's also satisfying. There's nothing like seeing a patient get well after he's been in critical condition."

SONAR MAPPING AND HEART ASSIST DEVICES: TECHNOLOGIES THAT MAKE A DIFFERENCE

Two technologies, echocardiography and percutaneous balloon pumping, are playing an increasingly important role in cardiac care at Presbyterian Hospital.

According to Dr. Henry M. Spotnitz, associate attending surgeon at Presbyterian, images created within the chest wall during surgery using ultrasound are so clear that small tumors and other growths which could be dislodged, blocking important blood vessels, can be located and removed. Dr. Spotnitz, who in cooperation with others at PH pioneered intra-operative echocardiography, has used the technique to locate non-functional areas of the heart to find the best place for a bypass.

"During surgery," says Dr. Spotnitz, "we place the sterilized ultrasound device gently against the heart for a top and side view. The entire process takes only two minutes."

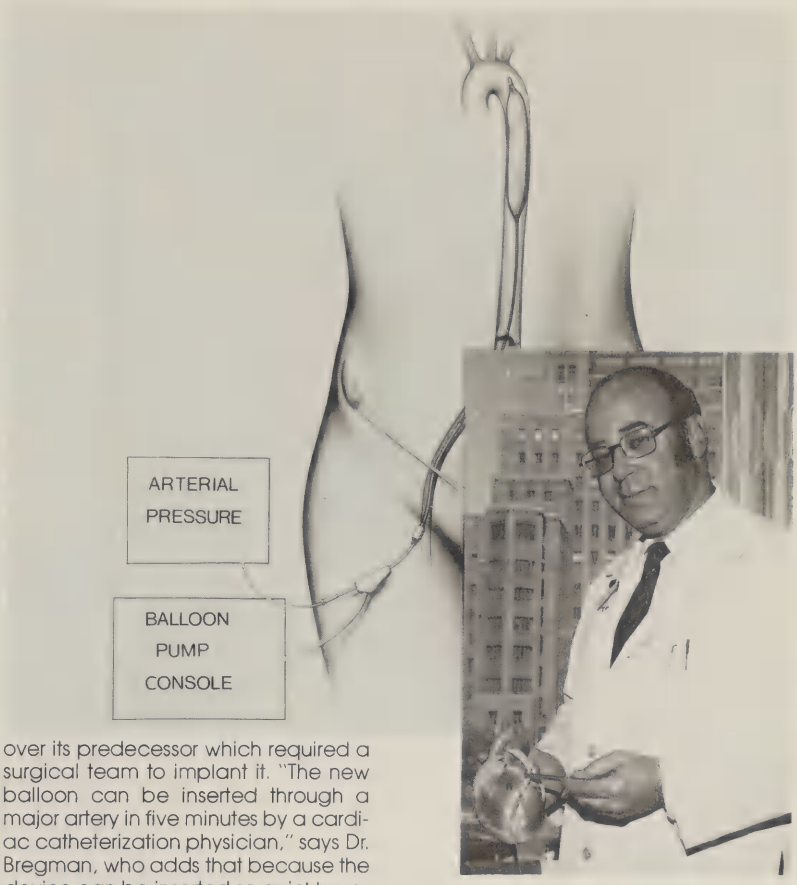
Echocardiography has a postoperative advantage as well: surgery can be evaluated immediately after the heart is closed. For example, if a valve is replaced and there is insufficient clearance between the valve and the anterior wall of the heart, this can be seen immediately using ultrasound. Ultrasound also can be used to measure the efficiency of the heart as a pump, both before and after an operation.

"With the aid of a minicomputer, we are able to measure the volume of the heart at rest and after it has contracted," explains Dr. Spotnitz. "This tells us how much blood the heart pumps with each beat, and helps us predict immediately after an operation how well the patient will do."

BALLOON MAKES RECOVERIES SAFER

While ultrasound technology is helping to guide doctors toward quicker, more accurate diagnoses, percutaneous balloon pumps are guiding patients with a variety of heart problems toward safer recoveries. "The balloon creates a space in the aorta, so that when the heart contracts it does so with less effort," explains Dr. David Bregman, who played a major role in the development and evaluation of the device. He adds that when the balloon inflates it increases pressure in the coronary arteries. "This helps stabilize the patient because it insures a steady blood supply to the heart itself," he says.

First available in 1979, the percutaneous balloon was a major advance over its predecessor which required a surgical team to implant it. "The new balloon can be inserted through a major artery in five minutes by a cardiac catheterization physician," says Dr. Bregman, who adds that because the device can be inserted so quickly patient outcome in this area has increased considerably since the new balloon was introduced.



Dr. David Bregman, who played a major role in the development and evaluation of the percutaneous balloon pump, explains how the balloon works (illustration) once it is inserted in the aorta.

The balloon can play a life saving role in many situations. "Over 75 percent of the patients who do not respond to medical therapy can be stabilized with the balloon. These are patients in critical condition – patients with unstable angina (a condition which often preceeds a heart attack) and patients in the process of having a heart attack," says Dr. Bregman, who has even used the balloon pumping system to assist in resuscitation.

Only a few millimeters wide when wrapped around its guide wire, the balloon expands and contracts on precise commands from a sophisticated pumping device to which it is connected.

The balloon, which has been used to help over 300,000 patients around the world, is also routinely used prior to, during and after major heart surgery to assist in supporting circulation.

NEW RESUSCITATION TECHNIQUE

Dr. Bregman has recently announced the development of a resuscitation technique called abdominal counter-pulsation. The technique, which is based on the principal of the balloon pump, involves pushing on the middle abdomen in synchronization with the heartbeat while closely monitoring the patient's ECG. Developed at PH by Drs. Bregman, Roger Coletti, Steven Cohen and Mr. Peter Kaskel, the technique may one day be an important alternative to standard CPR.

"I WAS CLOSE TO DEATH, AND NOW I'M ALIVE" — ENZY

Magnified 31,000 times, (right) a capillary off one of the coronary arteries reveals marked thickening of its wall (arrows). The dark inner circle is a single blood cell. Thickening of the blood vessels which serve the heart (coronary artery disease) resulted in the formation of a clot which threatened Mr. Reynoso's life (above). The clot was dissolved thanks to treatment by Dr. Melvin Weiss (far right).

"It was a terrible pain, enormous," recalls Mr. Reynoso. "The pain was so big I couldn't think of anything else." Reynaldo Reynoso, 50, had suffered from angina for three years. But during the last two weeks it had gotten worse. Episodes of chest pain had followed meals and had occasionally doubled him over as he walked down the street. Then, one chilly March morning as he prepared to leave for his job on the Newark docks, one of Mr. Reynoso's coronary arteries (the arteries that supply the heart muscle itself) began to shut down. Sweating and short of breath, Mr. Reynoso was rushed to Presbyterian Hospital by ambulance.

In PH's Catheterization Laboratory, Mr. Reynoso had a coronary arteriogram to locate any possible narrowing or blockage of the coronary arteries.

"About one million people are struck by heart attacks each year in the United States," says Dr. Melvin Weiss, director of PH's Cardiovascular Laboratory. "Most of these attacks result from a clot somewhere in the coronary arteries." He explains that when

TOPS HEART ATTACK IN PROGRESS

such a clot occurs, a portion of the heart muscle is deprived of blood. "The extent of the damage depends on how complete the blockage is, how large an area it affects, and how long the condition persists," he says.

In Mr. Reynoso's case the source of the trouble, a clot in the right coronary artery, was pinpointed before any serious damage had occurred. "But the artery could have shut down completely at any moment, and with it Mr. Reynoso's heart," says Dr. Weiss.

Because of the seriousness of the situation, Dr. Weiss, working with Dr. Roger Coletti, decided to treat Mr. Reynoso with urokinase, an enzyme known to dissolve blood clots. "The enzyme itself is not new. It's been available for about three years," says Dr. Weiss. "What is new is the way we administer it. We infuse it directly into the coronary artery at the site of the clot."

Mr. Reynoso, who was only the fourth patient to receive this particular treatment at PH, responded quickly. "The clot dissolved," reports Dr. Weiss, "but then it re-formed. We administered more urokinase, and this time the clot did not come back."

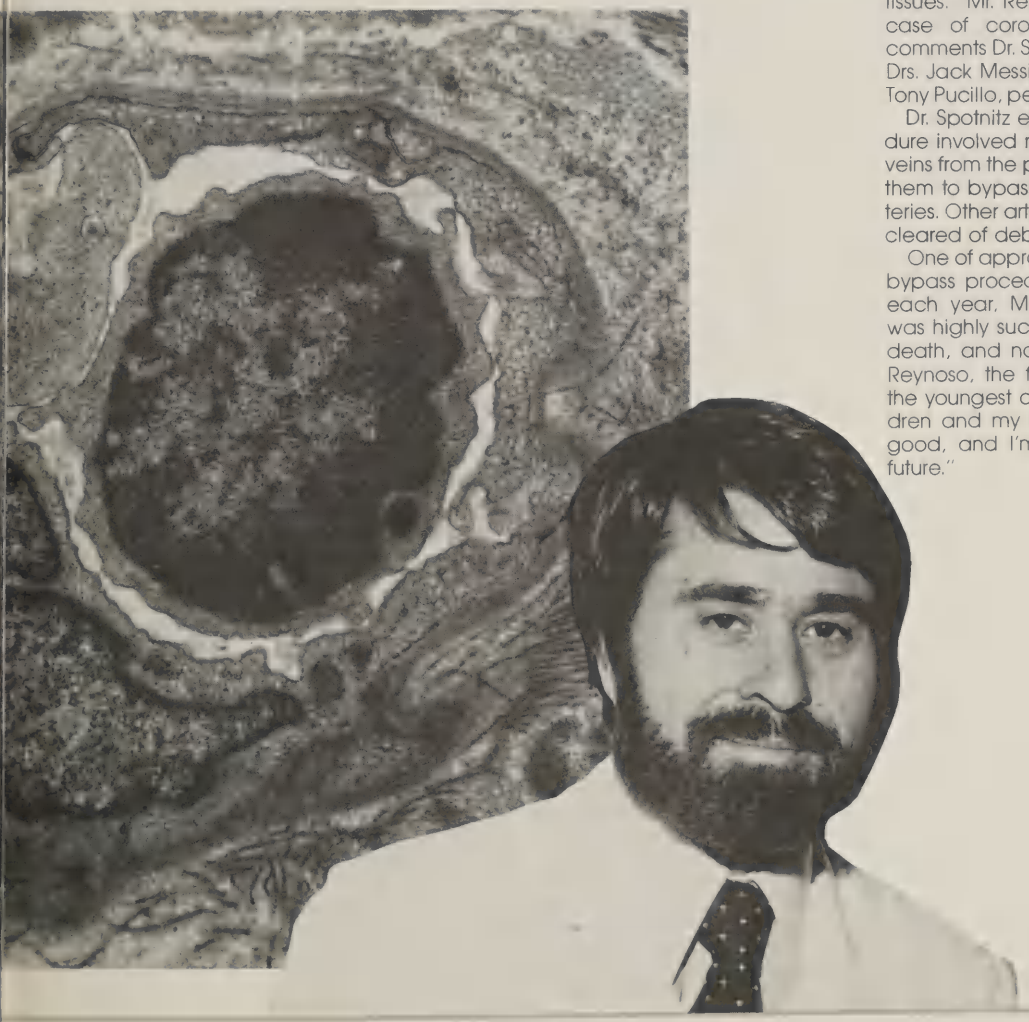
Because circulation was restored quickly, Mr. Reynoso's heart did not sustain any scarring—a source of disability and of arrhythmias (abnormal rhythms) for many survivors of heart attacks. No disability resulted. But Mr. Reynoso was far from safe. The next morning, while in the Cardiac Intensive Care Unit, Mr. Reynoso had another heart attack.

"It was then that we decided on an emergency operation," says associate attending cardiac surgeon, Dr. Henry Spotnitz. Working closely with the 9 ICU staff, Dr. J. Thomas Bigger, Jr., director of PH's Cardiology Division, succeeded in stabilizing the patient on medications, while Dr. Eric Powers inserted a percutaneous intra-aortic balloon pump, a heart assist device which helps increase pressure in the coronary arteries while diminishing strain on the heart. The balloon also guards against pressure drops during deep anesthesia.

During the six-hour operation that followed, Mr. Reynoso's heart was stopped completely while a heart-lung machine took over the job of circulating blood and oxygen and removing carbon dioxide from his tissues. "Mr. Reynoso had a clear cut case of coronary artery disease," comments Dr. Spotnitz who, along with Drs. Jack Messina, Gregory Scott and Tony Pucillo, performed the operation.

Dr. Spotnitz explains that the procedure involved removing non-essential veins from the patient's legs and using them to bypass seriously clogged arteries. Other arteries were retained but cleared of debris.

One of approximately 350 coronary bypass procedures performed at PH each year, Mr. Reynoso's operation was highly successful. "I was close to death, and now I'm alive," says Mr. Reynoso, the father of four children, the youngest of whom is 12. "My children and my wife are happy. I feel good, and I'm optimistic about my future."



REDUCING PSYCHIATRIC COMPLICATIONS FOR PATIENTS AFTER OPEN HEART SURGERY

Dr. Donald Kornfeld. His research has led to a marked reduction in psychiatric complications following open heart surgery.

"Miss W., a 56 year-old unmarried laboratory technician with chronic rheumatic heart disease, had a mitral-valve replacement. She recalled that on approximately the fifth postoperative day, she began to hear music," reports Dr. Donald S. Kornfeld, chief of PH's Psychiatric Consultation/Liaison Service. He adds that Miss W. became convinced a party was going on somewhere nearby and that people were snickering at her. Miss W. experienced other hallucinations and abnormal thought patterns including the idea that if she closed her eyes she would be returned to the operating room.

That was 17 years ago. Miss W. was one of 119 cardiac surgery patients in a landmark study of the psychiatric complications of open heart surgery. The study, conducted by Drs. Kornfeld, Sheldon Zimberg and James R. Malm, all of the Medical Center, has had important implications for heart surgery patients everywhere.

Most recently, it and other follow-up studies figured prominently in the design of PH's new Surgical Cardiac Intensive Care Unit.

"In the 1965 study we found that up to 70 percent of heart surgery patients were experiencing some form of delirium," comments Dr. Kornfeld. "Recent studies we have conducted indicate the figure has been reduced to 25 percent or less.

"The studies have analyzed preoperative, surgical, and postoperative factors," says Dr. Kornfeld. "We've found that age, degree of sickness and amount of time on the heart-lung machine are significant elements. But what really stands out is that the environment of the recovery area plays a crucial role in the cardiac surgery patient's mental health."

He explains that patients returning from cardiac surgery, already weakened by the operation itself and by the effects of mechanical life support, are more susceptible to negative environmental stimuli than other surgical patients.

"For one thing," he says, "they're more anxious and afraid of death. For another, in the past at least, they were surrounded by noisy mechanical devices, 24 hour lighting and hourly checks by nurses. There was also the problem of sensory deprivation resulting from the use of oxygen tents." He points out that these factors combined to produce an environment in which sleep was nearly impossible. "The clinical picture, in fact, closely resembled the syndrome reported in experimental situations of sleep and sensory deprivation," he says.

Like hundreds of other surgical cardiac intensive care units, PH's new unit reflects the recommendations made by Drs. Kornfeld, Malm and Zimberg. "Before surgery, patients are told they may experience some disorientation and perceptual distortion," says Dr. Malm, chief of cardiovascular surgery at PH. "This prepares them and contributes to reducing psychiatric complications."

He adds that the advent of sophisticated monitoring equipment has made it possible to examine patients continuously without disturbing them.

"And the environment is more natural," he says. "There are windows, partial partitions for privacy and noise reduction, and plenty of possibilities for staying in touch with the world. We've added clocks, televisions and radios, and we've invested in quieter, less obtrusive equipment. Most important, our nurses and liaison psychiatrists are well aware of the importance of environmental factors for these patients."

IN-UTERO TRANSFUSIONS: SAVING LIVES BEFORE BIRTH

Mary Jo Dier came all the way from Glens Falls, NY to Presbyterian Hospital because her baby was in trouble. The unborn child was suffering from a life-threatening anemia caused by an Rh incompatibility between its own blood and its mother's. Mrs. Dier had built up antibodies that were crossing the placenta and attacking and destroying the baby's red blood cells, a condition that occurs when an Rh negative mother has been sensitized to Rh positive blood from a previous pregnancy or miscarriage.

"She came to us in the 28th week of her pregnancy. After testing her amniotic fluid, we confirmed the diagnosis of anemia, and Dr. Edward Bowe and I carried out a transfusion the next day," says obstetrician Dr. Vincent Freda, one of the first people in the world to perform in-utero transfusions. "The transfusion kept the baby alive for two weeks, but then she developed water in the abdominal cavity. That's a sign that the baby is about to go into circulatory failure," adds Dr. Freda. It was clear that another transfusion would not help, so a Caesarian section was performed with the help of Dr. Bowe and pediatrician Dr. Adrien C. Moessinger.

As soon as Brett was delivered, she was in the hands of her pediatricians. And with their help, this baby, premature and requiring additional transfusions, was saved.

Dr. Freda first performed in-utero transfusions in 1964. Early procedures were done by making an abdominal incision through the uterus. The foot of the fetus was then exposed, and an incision made down the fetus's femoral artery. A polyethylene catheter was inserted into the femoral artery and an exchange transfusion was carried out. Although these procedures were effective, they were extremely complex and subjected the mother to major surgery.

Now Dr. Freda uses a less invasive technique to accomplish most in-utero transfusions. "I usually use the needle approach," he says.

It was the needle technique that helped save Brett Dier. The technique, which relies on television fluoroscopy, begins with the injection of a dye into the amniotic fluid 24 hours before the transfusion.

"Normally, the fetus is constantly swallowing amniotic fluid, so the dye enters its intestines," says Dr. Freda. Using a fluoroscope, the doctor is able to see the intestinal tract of the fetus. He guides a needle into the lower abdomen. A catheter is threaded through the needle, the needle is removed, and blood is injected into the fetus. In contrast to an exchange transfusion, no blood is removed.

Dr. Vincent Freda with baby Brett Dier.

"These babies would certainly die if we did not correct their anemia. We perform this procedure only when it's a life or death situation," comments Dr. Freda, adding that the procedure is repeated, if possible, until the baby is large enough to be delivered. Because there is only limited space in the fetus for the incoming blood, a fresh supply must be added every two weeks to replace the red blood cells destroyed by the mother's antibodies. "We give the fetus concentrated O negative blood, which has more red cells per unit volume than whole blood," Dr. Freda explains.

The procedure is easier and less risky if the fetus is further along in the pregnancy, because there is more space for donor blood and because it is easier to guide the needle to the correct place in the abdomen when the fetus is larger. If the procedure can be done late in the pregnancy, the baby can be delivered before it has to have a second transfusion and the problems associated with premature birth can be avoided. "We can save 85% of these babies if we begin the transfusions at 30 weeks and then deliver at 32 weeks," Dr. Freda says.

Drs. Freda and Bowe have treated over four hundred Rh babies in-utero. They have performed the transfusion technique as early as 22 weeks into the pregnancy, and have transfused the same fetus as many as five times, before delivery with successful results.

1892-1982

In Memoriam: Dr. Dana W. Atchley

Dr. Dana W. Atchley recently passed away at his home in Englewood, N.J. He was 89 years old.

Dr. Atchley achieved prominence in research, teaching and medical practice and was a leader in the study of electrolyte balance (the concentration of elements such as potassium and sodium in the body fluids) in relation to many diseases.

He graduated from the University of Chicago in 1911 and the Johns Hopkins University School of Medicine in 1915. After serving as medical house officer at Johns Hopkins Hospital, he joined Presbyterian Hospital and was named assistant professor of medicine at P&S and assistant attending physician at PH in 1916. In 1958 he became a consultant and professor emeritus. He was awarded the prestigious Kober Medal by the Association of American Physicians in 1969 and in 1968 the Atchley Pavilion was named in his honor. Dr. Atchley is survived by three sons, 11 grandchildren and six great grandchildren. A memorial service will be held July 28, at 4pm at the PH Chapel.

Study Confirms Success of Refinements in Neonatal Care

Dr. John Driscoll

A recent study conducted at the Babies Hospital Unit of Presbyterian Hospital indicates that efforts being made at PH to improve the survival rate and quality of life of premature infants are working.

The two-year study conducted and written by Drs. John M. Driscoll, Jr., Yvonne T. Driscoll, Raymond I. Stark, Barbara C. Dangman, Alicia Perez, Jen-Tien Wung, Paula Kritz, PNP, and Mary E. Steir, MS, was published in a recent issue of *Pediatrics.* It summarized the treatment of 54 infants with birthweights of 1,000 grams or less.

A little more than a decade ago, only 10% of the infants in this weight category survived. Of the 54 infants in the study, almost 45% survived. Furthermore, although these infants were at greater risk of developing neurologic, intellectual or behavioral disorders, such complications affected only a small percentage of these tiny newborns. The 23 infants available for follow-up study were examined between the ages of 18 months and three years. Only 17 percent showed neurologic deficit, while only 13 percent had intellectual deficit. Of the survivors, 26 percent had mild, nonblinding retrolental fibroplasia.

The study suggested that the higher survival rate and lower rate of complications are due in part to refinements in obstetric and pediatric care at PH. The Transitional Care Nursery, located within steps of the delivery room, and the microbiochemical laboratory are crucial to PH's excellent track record in treating low birthweight premies. The microbiochemical laboratory, in fact, is one of the first such facilities in the US to be located next to a neonatal ICU.

The CPMC study is one of the first to describe the intellectual, physical and motor development of low birth weight survivors.

Of the perinatal factors examined, only birth asphyxia was significantly related to death and morbidity of these tiny newborns. As perinatal asphyxia is reduced, say the authors, there is promise that the prognosis for infants of very low birthweights will continue to improve.

25th Alan DeForest Smith Lecture Highlights Orthopedic Meeting

The Columbia-Presbyterian Medical Center recently hosted the 56th Annual Meeting of the New York Orthopaedic Hospital Alumni Association. Guest lecturer at the event was Dr. Howard H. Steel, chief of staff, Shriners Hospitals for Crippled Children, Philadelphia Unit. The meeting was highlighted by the 25th Alan DeForest Smith Lecture which was presented by Dr. Steel. The subject of Dr. Steel's lecture was "The Troika of Pelvic Problems."

Controlling Rage Outbursts In Children With Drug Therapy Termed Successful

An innovative drug therapy for children, offered exclusively at Presbyterian Hospital, offers considerable promise in the treatment of uncontrolled rage outbursts.

The Pediatric Neuropsychiatry Service at PH is the only place in the country that routinely uses the drug propranolol to treat children who exhibit this disturbing condition. Propranolol, which has been widely used as an anti-hypertensive drug, lowers blood pressure, counteracts the effects of adrenalin and creates a tranquilizing effect. And for some children it can also help control rage outbursts (physical or verbal aggressive behavior).

"Results have been encouraging," says Dr. Daniel Williams, director of the Pediatric Neuropsychiatry Service.

In a retrospective three-year study, conducted by the Service, more than 75 percent of the 30 children who were treated for uncontrolled rage outbursts demonstrated moderate or marked improvement after being given propranolol. Before receiving this drug, all of the patients had been treated with traditional medications and most were also provided with psychotherapy, but neither of these treatments was successful. "Only propranolol helped control the rage outbursts," says Dr. Williams.

In recent years, propranolol also has been used successfully in selected cases to treat rage outbursts in adults.

Dr. Daniel Williams

Controlling Seizures Through Psychotherapy

Can emotional stress precipitate seizures? Over the last ten years neurologists and psychiatrists have been studying this question with a view to helping the nation's two million patients with epilepsy, as well as many others who are given this diagnosis erroneously.

Now, a study conducted on the Pediatric Neuropsychiatry Service indicates not only a strong link between stress and seizures, but the possibility of controlling some seizures through psychotherapy. "During a 16 month period our study disclosed evidence that psychiatric intervention is often helpful in controlling seizures in patients who have not responded to medication," reports Dr. Daniel Williams, director of the Pediatric Neuropsychiatry Service.

According to Dr. Williams, psychiatric intervention resulted in a "major improvement" in controlling seizures in 70 percent of 37 epileptic children whose seizures were noted by referring neurologists as being precipitated by emotional stress. He adds that "a majority of the patients continued to improve during a 2 to 36 month follow-up period. And 32 percent of the patients were able to decrease anticonvulsant medication, while 16 percent (those whose seizures were purely psychiatric) were able to totally discontinue anticonvulsants."

Dr. Williams explains that reducing anticonvulsant intake for appropriate patients is highly beneficial. "In high doses these drugs are potentially toxic," he says. "They can impair neurologic functions."

The interdisciplinary team currently working with Dr. Williams on the Pediatric Neuropsychiatry Service includes Dr. Patricio Paez (psychiatrist), Dr. Helen Hanesian (psychologist), Ms. Tricia Blake (social worker) and Dr. Arnold Gold, (neurologist).

Prizes Highlight Benefit Party

Approximately 125 friends of the Columbia University School of Nursing recently enjoyed the annual student Nurses' Scholarship Fund Benefit. The Benefit, which raised about $12,000, was highlighted by several major prizes including a dress donated by Bill Blass.

PH Site of Conference on Health Care for Seniors

Maxwell Hall was the site of the Second Annual Conference on Health Care for Seniors. The Conference, which was hosted by the Committee on Health Care for Seniors of the PH Community Health Council, drew over 200 Washington Heights residents. Kicking off the Conference was a slide presentation on the Medical Center's modernization plan as it relates to Seniors. Also offered were panels on subjects such as "How to Manage Stress and Forgetfulness," and workshops on subjects such as "What's Happening to Medicare and Medicaid?"

25 Year Club Honors New Members

CPMC's 25-Year-Club held its annual awards ceremony and dinner on May 6, at the main cafeteria. Presenting awards to approximately 100 new members were Mr. Edward R. Hajjar and Mr. Calvin P. Hatcher, both vice presidents of the Club.

Enjoying the 25 Year Club festivities were Dr. Alexander Garcia (34 years), chief of the Orthopedic Surgery Service, and Ms. Sadie Cardona who has worked in the Record Room and as a receptionist for 25 years.

PH Volunteers Honored

Presbyterian Hospital honored some 219 volunteers with a special reception in Maxwell Hall on April 28. Extra special honors went to Mr. George Glynn who contributed 1,153 hours, and Miss Virginia Proodian who gave 1,060 hours in 1981. Also receiving special commendations were more than 70 volunteers who each gave upwards of 150 hours of service last year. Volunteers provide a helping hand in countless areas around the Hospital.

Presiding at the ceremony was Mrs. George A. Perera, chairman, Volunteer Committee, Presbyterian Hospital Auxiliary and a volunteer at Presbyterian for 36 years. Mr. Irwin Plotkin, vice president for personnel, was the guest speaker. Entertainment was provided by the Alexander Robertson School Choir.

Mr. George Glynn and Miss Virginia Proodian

Health Council Director Appointed

At a reception in her honor, Ms. Dagmaris Cabezas, newly appointed executive director of the Presbyterian Hospital Community Health Council, gets together with Mr. Eugene Devine, PH vice president for Support Services.

Ms. Dagmaris Cabezas and Mr. Eugene Devine. *(Photo by Augie Fernandez.)*

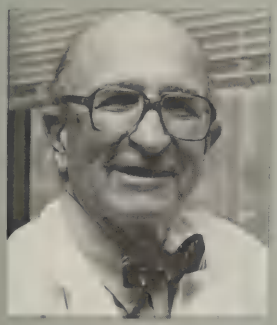
In Memory of Dr. Furnberg

Susan Margaret Furnberg, 32, died of cancer at Presbyterian Hospital on February 16, 1982. Dr. Furnberg graduated from the University of Pennsylvania School of Medicine in 1977. She was a resident in Pediatrics at the Babies Hospital Division of Presbyterian Hospital. She completed her residency here in 1980 and was a fellow in Pediatric Hematology/Oncology since July, 1980 under the direction of Dr. Sergio Piomelli. A memorial fund has been set up to establish a lecture series at Babies Hospital. Checks may be sent to Susan Margaret Furnberg, M.D. Memorial Fund, c/o Pediatric Hematology/Oncology, Presbyterian Hospital, 622 West 168th St., New York, NY 10032.

Hattie Alexander Memorial Lecture

Dr. David H. Smith was the guest speaker for the 1982 Hattie Alexander Memorial Lecture. Dr. Smith, who is professor and chairman of the Department of Pediatrics at the University of Rochester Medical Center, delivered a lecture entitled "Prospects of Preventing *Hemophilus influenzae* Infections." Dr. Smith is the seventh guest speaker since the lecture series began in 1976. The lecture series is named in memory of Dr. Hattie Alexander, who was a superb teacher and clinician at Presbyterian Hospital's Babies Hospital Unit for over twenty years. She was known world wide for her work developing the first effective treatment of meningitis caused by the *Hemophilus influenzae* bacterium.

FOOTNOTES



MICROBIOLOGY: **Dr. Harold S. Ginsberg** was recently elected to the National Academy of Sciences. Election to the Academy is considered one of the highest honors accorded an American scientist. Dr. Ginsberg, 64, is Borne Professor of Microbiology at P&S and chairman of the Department of Microbiology. A leading virologist, Dr. Ginsberg has specialized in the study of adenoviruses, which can produce such varied effects as flu-like ailments, eye and gastrointestinal infections in humans, and cancerous tumors in animals. He was elected in 1980 to the prestigious Institute of Medicine.

SCHOOL OF NURSING: **Dr. Lucie S. Kelly** has been elected to serve a two-year term as president-elect of Sigma Theta Tau, the 65,000 member National Honor Society for Nurses. Dr. Kelly has recently been appointed editor of *Nursing Outlook*, a publication of the American Journal of Nursing Company which has contracted with Columbia University School of Nursing for her editorial services, along with the services of her associates, Dr. Melanie Dreher, assistant professor of Nursing and Public Health, and Dr. Elizabeth Mahoney, assistant professor of Nursing.

DERMATOLOGY: **Dr. Leonard C. Harber** is the new president of the Society for Investigative Dermatology. Dr. Harber is widely known for his work in allergic and photoallergic skin diseases.

The Society for Investigative Dermatology, which was founded in 1937, is composed of 2,500 physicians and researchers with active interests in the investigative study of the skin and its functions and reactions, both physiologic and pathologic.

PEDIATRICS: **Robert B. Mellins, M.D.** has been appointed president of the American Thoracic Society, an 8,500 member professional organization.

ORTHOPEDICS: **Dr. Charles S. Neer, II,** has been elected founding President of the American Society of Shoulder and Elbow Surgeons.

ARTERIOSCLEROSIS RESEARCH CENTER: **Dr. DeWitt S. Goodman** has been awarded $5.9 million over a five year period to support CMPC's Specialized Center of Research (SCOR) in Arteriosclerosis through November, 1986. The award comes from NIH's National Heart, Lung and Blood Institute. The Center includes a clinic led by **Dr. Robert H. Palmer** which serves as a research facility for the evaluation and clinical management of patients involved in studies carried out in the Center's six other units.

BIOCHEMISTRY: **Dr. Richard Axel,** who has devised a novel way to introduce virtually any gene into mammalian cells, has been selected to receive the National Science Foundation's (NSF) seventh annual Alan T. Waterman Award.

Dr. Axel, 35, was selected from 128 nominees to receive the award, which includes a medal and a three-year NSF research grant of up to $50,000 a year.

ENGINEERING: **Robert Roberts**, mechanical engineer at PH for two years, was recently elected governor of the century-old American Society of Mechanical Engineers, a 100,000 member group.

PATHOLOGY: **Drs. John J. Fenoglio, Jr.,** and **Melvin B. Weiss** have recently published *Endomyocardial Biopsy: Techniques and Applications,* a 176 page book which includes sections on the role of endomyocardial biopsy in the management of acute rejection, diagnosis of myocarditis and endomyocardial biopsy in children.

SURGERY: **Dr. Jose M. Ferrer, Jr.,** attending surgeon, professor emeritus of surgery and associate dean at P&S, has been with Presbyterian Hospital ever since he interned here in 1938. Recently a conference room was dedicated in his honor. Located on the 14th floor of the P&S building, the Jose M. Ferrer, Jr., Conference Room provides a much needed area for the Surgery Service's teaching needs. Funds for the Conference Room were provided by the Charles E. Merrill Trust. Dr. Ferrer recently retired.

UROLOGY: **Drs. Harris M. Nagler** and **Ralph deVere White** are the winners of the 1982 American Urological Association Research Award. They received the award as a result of their study of the immunologic mechanism of contralateral testicular defect in spermatogenesis seen in individuals with unilateral testis damage.

Dr. John K. Lattimer conducted the recent annual meeting of the American Association of Genitourinary Surgeons.

Dr. Jerry Blaivas has been awarded a grant of $50,000 from the Multiple Sclerosis Society. The award will enable the Medical Center to establish a unique clinical unit for the evaluation and treatment of M.S. patients suffering from retention or incontinence.

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THE SCIENCE OF PAINLESS SURGERY
THE ANALGESIC ARSENAL
EMPHASIZING CHILDBIRTH ALTERNATIVES

SEPTEMBER, 1982

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STETHOSCOPE

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IMPORTANT NOTICE TO OUR READERS

You are invited to participate in The Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity or unitrust, life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

PERFECTING THE PAIN KILLERS

Like a pilot guiding a plane through dense fog toward a runway visible only by means of sophisticated instruments, the anesthesiologist guides his patients through a world of induced, painless sleep toward a safe postoperative recovery.

Between the first moments of preoperative tranquilization and the return to consciousness in the ICU lie countless measurements and treatment modifications, and a hundred-year history of improvements, which help to keep the patient on course through operations ranging from the removal of a gallbladder to the transplantation of a heart.

Anesthesiology has developed in many significant ways since 1846 when ether was first used during an operation. "The major advances have come during the last five decades," says Dr. Allen Hyman, co-director of the Surgery Anesthesia Intensive Care Unit and medical director of the Respiratory Care Service at PH.

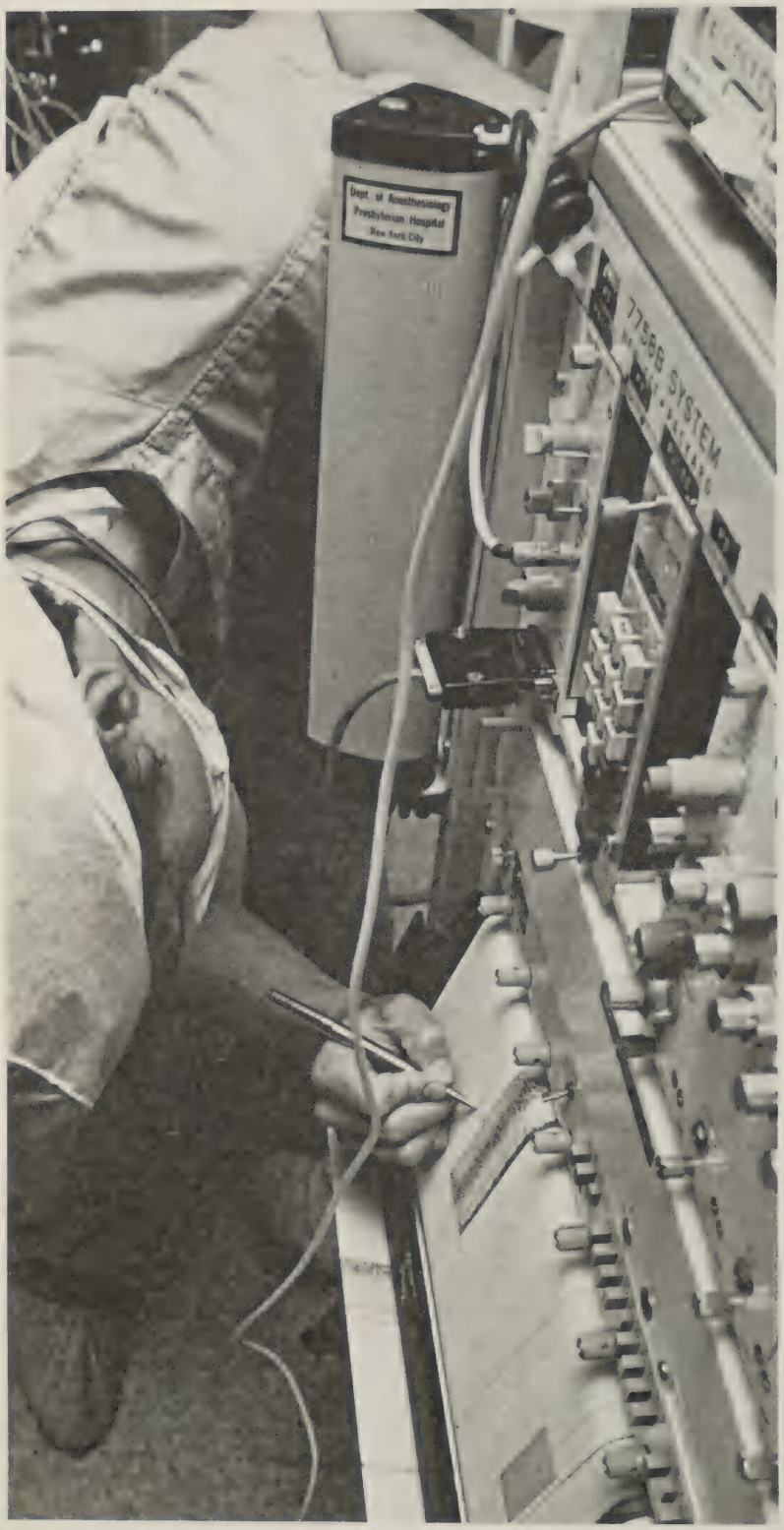
He points to the introduction in the 1930s of thiopental (Pentothal), the first agent which, in contrast to ether, provided a non toxic, quick and pleasant form of anesthesia.

In the late forties and early fifties, potent muscle relaxant drugs such as curare for the first time permitted adequate muscle relaxation without resorting to deep or dangerous levels of anesthesia.

A major advance in operating room safety took place in the 1960s with the introduction of the first safe non-flammable anesthetic gas. "In the past, operating room personnel had to guard against every possible cause of sparks, even static electricity in the hair or on shoes. The possibility of an explosion was very real," says Dr. Hyman. He explains that the introduction of non-flammable agents allowed many electrical instruments to be used for the first time in the operating room. These included instruments for electric cauterization, X-ray devices, lasers and special illumination. In addition, the new anesthetic agents – more potent than their predecessors – allowed higher levels of oxygen to reach the patient than in the past.

During the last decade, highly sophisticated measuring and monitoring devices have been developed and refined. Instruments which can measure carbon dioxide concentrations and automatically monitor respiration and cardiovascular function are representative of the developments that have improved safety by placing more information at the anesthesiologist's disposal.

THE SCIENCE OF PAINLESS SURGERY



When the first drops of morphine sulfate and seconal, two routinely used pre-anesthetic sedatives, were injected into her muscles, Mrs. G. was thinking about the difficult operation ahead of her. For the next four hours doctors would be involved in repairing a dangerous narrowing in her carotid artery, the principal artery that feeds the brain. Performed on over 300 patients per year at PH, the operation, known as a carotid endarterectomy, is one of the most difficult from the anesthesiologist's point of view.

Like many patients who undergo this procedure, Mrs. G. had a weak heart and seriously clogged blood vessels.

"The needs of such a patient's brain and heart in terms of blood pressure and flow are frequently diametrically opposed. This makes anesthetic management very tricky," says attending neuroanesthesiologist Dr. Donald Finck. He explains that in such cases, special attention must be paid to the level of anesthesia, since many anesthetics tend to depress heart activity. "It's up to the anesthesiologist to deliver the right medications, in the right concentrations and at the right times to balance these needs," he adds.

Once premedicated, Mrs. G. was taken to the operating room where, still conscious, she was connected to an I.V. and to arterial lines for constant measurement of blood gases and blood pressure. "These measurements help us regulate the mixture of anesthetic gas and oxygen to increase safety during this kind of surgery," says attending neuroanesthesiologist Dr. Foun-Chung Fan.

As a routine precaution, Mrs. G. was also hooked up to ECG and EEG monitors for continuous readings of her heart and brain activity. "PH is one of only six medical centers in the country that routinely monitor EEG readings during such major operations," says Dr. Finck. "If brain activity drops, we modify anesthesia to restore it," he adds.

Fully connected to all her monitors, Mrs. G. was ready to go to sleep. An injection of sodium pentothal brought on initial anesthesia, while an injection of succinylcholine produced sufficient muscle relaxation for an endotracheal

Anesthesiologist Dr. Foun-Chung Fan checks brain wave reading (EEG) during carotid endarterectomy. PH is one of only six medical centers in the country that routinely monitor EEG readings during such major operations.

A LEADING ROLE IN ANESTHESIOLOGY

The history of modern anesthesiology is closely linked to developments at the Columbia-Presbyterian Medical Center. Founded in 1938 by Dr. Virginia Apgar, CPMC's Division of Anesthesiology was one of the first in the nation. Dr. Apgar is credited with the development of an objective scoring system to evaluate the clinical status of the newborn at birth following administration of anesthetic and sedative drugs. Accepted around the world as the standard method of evaluation of the newborn, "the system has had a profound impact on the development of improved anesthetic practices in obstetrics," says anesthesiologist Dr. Lester C. Mark.

By 1952, under the direction of Dr. Emmanual M. Papper, the Division of Anesthesiology gained departmental status. Largely as a result of Dr. Papper's commitment to teaching and research, over 30 CPMC alumni have become chairmen of anesthesia departments around the nation.

Major contributions to the understanding of the basic physiology of respiration, circulation, metabolism and thermal regulation of the newborn—all important factors in successful anesthetic management—were made in the 1950s by Dr. L. Stanley James and others at the Medical Center.

Medical Center doctors have played a leading role in the development of techniques for monitoring acid-base balance during anesthesia. High acid levels can lead to reduced heart and kidney function.

Significant contributions have also been made by CPMC doctors in developing anesthetic equipment. These contributions include apparatus for continuous monitoring of muscle relaxant effects, a device for the continuous monitoring of blood pressure, and a special valve to prevent accidental failure of oxygen supply during anesthesia.

"There is no question that anesthesiology has evolved from a primitive to a highly technological stage over the last few decades, and that this Medical Center has played an important part in that evolution," comments Dr. Henrik Bendixen, director of the Anesthesiology Department at CPMC since Dr. Papper's retirement in 1962. "Thirty years ago," he adds, "we couldn't have dreamed of operating on many of the patients we work on routinely today."

Presbyterian Hospital's four Department of Anesthesiology directors: Dr. Virginia Apgar, Dr. Shih-hsun Ngai (left), Dr. Emmanuel M. Papper, and Dr. Henrik Bendixen, (right).

tube to be inserted. The tube permits safe, artificial respiration. "Without this, patients would breath insufficiently or not at all during anesthesia," says Dr. Allen Hyman, medical director of the Respiratory Care Service and co-director of PH's Surgery Anesthesia Intensive Care Unit.

With the operation in progress, anesthesia was maintained with halothane, a powerful, nonflammable anesthetic gas. The halothane is combined with nitrous oxide. "The nitrous oxide increases absorption and enhances the effect of the halothane so that less is needed," says Dr. Fan.

"At this point we also administer an injection of metocurine, a long-acting muscle relaxant, to insure that the patient will not move unexpectedly during the operation," he adds. The strength of the dose is gauged by using a device called a nerve stimulator which uses electrodes to stimulate muscles. "When the fingers do not twitch, the dose is about right," says Dr. Hyman.

Three and a half hours after being wheeled into the O.R., surgeons had located and repaired Mrs. G's dangerously narrowed artery and had closed the wound. Mrs. G. was given less and less halothane. Three minutes after surgery she was waking up. A morphine-like narcotic, fentanyl, protected her from feeling any pain, and injections of robinol and neostigmine reversed her muscle relaxation so that she could move and breath normally.

OPERATING ON THE BRAIN STEM

Although surgery on the carotid artery requires an extraordinary balance of medications, especially between those that raise and lower blood pressure, many other procedures demand equally stringent fine tuning of the anesthesiologist's art.

In neuroanesthesiology, a field rendered all the more difficult by the sheer length of many procedures—some last up to 34 hours—doctors often operate on the brain stem, the area that regulates respiration and pulse rate. "The pulse rate can go from normal down to 20 from one moment to the next. Without highly controllable anesthesia, these operations would be virtually impossible," comments Dr. Finck.

In addition, many neurosurgical procedures are performed with the patient in a sitting position. "This poses a special problem," says Dr. Finck. "Since the operating field is above the heart, it is possible for air to be sucked into open vessels. We have to detect and counteract this."

CARDIAC ANESTHESIA: SPLIT SECOND DECISIONS

Another area that poses particularly complex problems for the anesthesiologist is heart surgery. "If a patient has an angina attack during open heart surgery a decision as to how to control it must be made almost instantly. The patient could die in as little as 30 seconds," says Dr. Stanley Rosenbaum, director of Cardiac Anesthesiology at PH.

According to Dr. Rosenbaum, cardiac surgery requires an especially gentle anesthetic technique. "Patients are often extremely frail. The normal tone of their blood vessels varies more than in other patients and they are therefore much more susceptible to changes in blood pressure," he says.

THE ANALGESIC ARSENAL

You can't see it, and there are no objective tests to measure it. In at least half of all cases there is no apparent physiological reason for it, but there is no denying it—pain is real. Up to 50 million Americans are victims of chronic, intractable pain. Millions are so severely affected that they are either partially or totally disabled for periods ranging from a week to a month; some permanently.

The most common pain disorders are headaches and backaches. Dr. Kenneth Greenspan, director of CPMC's pioneering Center for Stress and Pain Related Disorders, estimates that 40 percent of Americans have headaches bad enough to require professional attention. Other pain disorders include TMJ Syndrome (severe facial pain usually in the area of the temporomandibular joints), trigeminal neuralgia (pain radiating from the trigeminal nerves in the face), sympathetic dystrophy (blood vessel spasm), and pains in the extremities that are related to nerve compression or injury in the spinal cord. Other sources of chronic pain may be secondary to cancer, amputation, diabetes, and vascular disorders.

With pain being such a common experience it would be useful to clearly understand its causes and patterns of expression. Unfortunately its causes are often obscure and its patterns may be bizarre. Pain is particularly disturbing and frustrating when it persists for long periods and does not respond to various treatments. Dr. David Richlin, attending anesthesiologist and co-director, with Dr. Leonard Brand, of Presbyterian Hospital's Anesthesiology—Pain Treatment Service says, "Though pain is perceived by the sufferer as an unpleasant and threatening sensation of tissue damage, we know that there's much more to it than that. Often no current or ongoing injury is found, even after careful examination and testing. This in no way negates the reality of the pain. Rather, it points up the complexity of the pain experience and suggests some disorder of the nervous system that acts to simulate or perpetuate the pain experience. Fortunately there are several safe and reliable techniques that can temporarily block, modulate, or stimulate nervous system mechanisms to produce dramatic and sustained relief."

For sixteen year-old Sara Bolton one such technique changed her life. Sara was born with an extra muscle in her right wrist. As she grew older the muscle expanded, eventually causing numbness, pain and loss of motion. When she had to give up playing the piano, Sara decided that things had gone too far. An operation by Presbyterian Hospital orthopedic surgeon Dr. Harold Dick successfully removed the muscle, but after a month the pain returned. "Writing was torture," she recalls. "The pain prevented me from doing just about everything."

Referred to Drs. Richlin and Brand, Sara soon found relief. After the first of four sympathetic nerve blocks—injections of an anesthetic close to a nerve center (ganglia) that controls the affected area—Sara was much better. "Three minutes after the first procedure my hand felt normal," she reports. "The effects of the first treatment lasted for only a few hours. But the pain never came back the way it was before. With the additional treatments I got much better. Now I'm off medications and I can play the piano again."

TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION

Five years ago Milton Mattis, a 37-year-old pharmaceutical salesman, felt a severe pain in his back while playing tennis. "The pain got worse and worse," he recalls. "It spread into my right leg." Orthopedic therapy, acupuncture and even a back operation failed to help. "I was at the end of my rope," he says.

But a few months ago Mr. Mattis heard about PH's Anesthesia-Pain Treatment Service. "They put me on an exercise program, gave me antidepressants and anti-inflammatory medications," he says. Mr. Mattis was also fitted with a battery operated pad called a transcutaneous electric nerve stimulator (TENS). The device is

PAIN RELIEF—THE EI

What is pain? Most doctors agree that pain is usually a symptom of illness—a warning system that alerts us to a problem somewhere in our bodies. But pain can also be an illness. Like an alarm that continues to sound after the fire is out, pain can continue even after damage has been repaired.

In an effort to improve pain relief techniques and diminish the use of powerful analgesic (pain killing) drugs, researchers increasingly are turning to the study of the body's own pain killers—endorphins.

"Endorphins (endogenous opiate-like peptides) are short chains of amino acids that bind specifically to opiate receptors in the central nervous system. They are functionally similar to morphine-like drugs," says neurologist Dr. Gary Abrams. He explains that a number of endorphin substances have been identified since the first of these were isolated in the mid-Seventies.

Like other doctors in this new area, Dr. Abrams believes that the release of endorphins may well be the determining factor behind the success of analgesic treatments as varied as deep brain electrical stimulation and acupuncture.

"Hypothetically, when appropriate stimulation takes place, the level of endorphins rises, but many other substances are released as well, some of which also have analgesic qualities," says Dr. Abrams. "We're examining the brain and spinal cord with an eye toward anatomically localizing these substances. This is a first step in understanding where and how these substances may work."

Conventional anesthetic treatments may also be linked to the release of endorphins. "We have indirect evidence that anesthetics may cause the release in the brain of endogenous opiate compounds," says anesthesiologist Dr. Donald Finck.

"If this relationship can be established, it will give us important information about how anesthetics work," he adds, "and that information could be used to further refine the anesthetics we now have and perhaps even develop new ones."

worn over the site of pain. "It worked," says Mr. Mattis. "The pain in my left leg and right side is virtually gone. I'm feeling better physically and emotionally."

Doctors aren't sure exactly how the stimulator counteracts pain, but they speculate that it may either cause the body to release its own pain killers, or act to inhibit the passage of pain impulses through the brain.

"THEY SAVED MY LIFE"

Ten million Americans, most of them women, suffer from facial pain. TMJ (temporomandibular joint) syndrome is one of the leading causes of facial pain. The illness, which doctors speculate may be hormonally triggered (this would explain its prevalence among women), is characterized by inflammation and degeneration of TMJ cartilage.

For Susan Silver, a 27-year-old associate editor of *US* Magazine, TMJ syndrome was a disaster. "The pain was so bad I couldn't even chew. I was reduced to an all-liquid diet. My whole life was affected. Going out to eat, traveling – things like that became impossible," she recalls.

Then, two-and-a-half years ago Susan heard about Dr. Joseph Marbach and his work at CPMC's TMJ Facial Pain Clinic. The Clinic, which was founded in 1948, is the oldest, and one of the most highly successful clinics of its kind in the nation.

"Dr. Marbach and Dr. John Varoscak gave me weekly injections of a steroid to reduce inflammation; they prescribed jaw exercises and muscle relaxants. Within a year I could eat anything without having an attack," says Susan, adding, "They saved my life. They made it possible for me to continue my career. The pain isn't completely gone, but it is manageable."

CONTROLLING THE CAUSES OF PAIN

Like millions of other TMJ patients, Susan also suffered from debilitating headaches, some lasting as long as a week. But Susan has learned to control her headaches using portable biofeedback equipment.

According to Dr. Kenneth Greenspan, who has achieved a 70 percent success rate using biofeedback to treat over 500 chronic headache patients, so-called involuntary processes in the body (like contracting blood vessels which cause headaches) are involuntary only because we don't have the information to influence them. "But once patients get immediate, ongoing feedback about their blood flow, blood pressure, brain wave activity and muscle tension, they start to learn to control these processes," explains Dr. Greenspan, who is a consultant on stress to the American Red Cross and the President's Council on Physical Fitness.

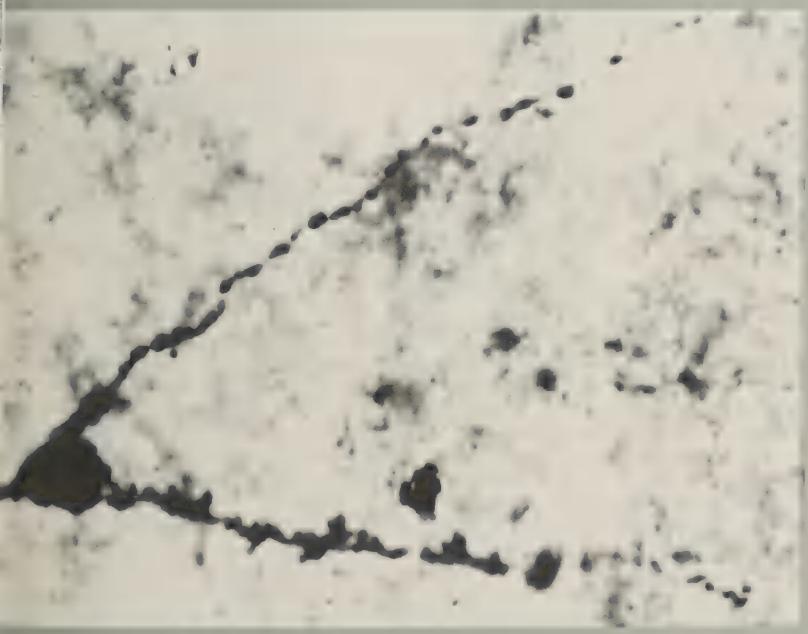
"We don't know how visualization and volition get converted into action," he says, "but in 16 sessions or less, we can teach patients to control a variety of pain conditions."

TURNING OFF PAIN BY IMAGINING ICE CRYSTALS

Still not widely practiced in this country, but highly recommended in cases in which drugs are contraindicated are acupuncture and hypnosis. "Acupuncture has been used with success in treating many kinds of pain syndrome," says Dr. Lester C. Mark, attending anesthesiologist at PH, and past president of the New York Society of Acupuncture for Physicians and Dentists. He explains that acupuncture is thought to work by interfering with pain messages, or by stimulating the release of naturally occurring pain killers.

Hypnosis, a form of intensely focused concentration, can also be a highly effective tool in controlling pain in selected patients; "The brain can be one of our best therapeutic instruments," says Dr. Mark. One patient, he says, was able to discontinue morphine treatment following a major leg operation. "Under hypnosis he imagined ice crystals growing into his leg. He reported that by using this image he was able to completely and permanently turn off the pain."

PHIN CONNECTION



ng an immunologic staining technique and a magnification of nearly 1000x, researchers CPMC took this photograph of a typical brain neuron. The staining technique reveals t the neuron contains a powerful analgesic (pain relieving) peptide

ANESTHESIA FOR CHILDBIRTH: MATERNAL AND FETAL BE

A baby is delivered by caesarean section, one of several circumstances in which general anesthesia is necessary for childbirth. Caesarean sections const

What distinguishes obstetric anesthesiology from other specialties in anesthesiology? "The fundamental difference," says anesthesiologist Dr. Mieczyslaw Finster, "is that it affects anywhere from two to six people at a time. The fact that whenever we medicate the mother we may also have an affect on one or more additional patients is basic to our clinical approach, as well as our research," he adds.

PH's obstetric anesthesiology program, one of the oldest and most highly respected in the nation, as well as one of the leaders in offering expert around-the-clock care, is directed by Dr. Finster and Dr. Hilda Pedersen, associate attending anesthesiologist.

"The program relies on minimal use of anesthetics during labor and delivery, says Dr. Finster. "Our approach does not imply that anesthetics affect the fetus in a negative way. We simply believe that medications should not be given unneccessarily. In fact, in many cases where labor is easy, short and not too painful, mothers require no medication."

He adds that some recent reports which have suggested that even properly administered anesthetics may have lasting adverse effects on the fetus have been totally disproved. "What has been found," says Dr. Finster, "is that following substantial use of some maternally administered drugs such as narcotics, slight alterations i the newborn's neurobehavioral re sponses can be detected during th first 24 to 48 hours. But these are tran sient responses. Clinically, these ba bies are normal."

Dr. Finster points out that studies con ducted at CPMC have shown that th newborn is no more susceptible t drugs than an adult. In fact, he says "On a dose per weight basis, the new born actually has a higher tolerance because it has more water per uni weight."

In most cases that require some pai relief a local anesthetic does the job Rather than giving repeated injection as labor proceeds, a needle is insert

tely 20 percent of all deliveries. Once the newborn's umbilical cord has been clipped, anesthesiologist Dr. M. Finster delivers oxygen.

between the second and third lum-
r vertebrae. A catheter is threaded
ough the needle, and the needle is
n removed. Intermittent injections of
sacaine or Marcaine can then be
en through the catheter as needed
provide numbness (but not paraly-
from the waist down. "The system is
e under proper supervision. It also
ows the mother to be alert and to
operate with the medical staff dur-
delivery," comments Dr. Finster.
Anesthetics not only diminish the
ther's pain; but significantly help
fetus in certain situations. "We
ngly recommend analgesia when
n is intense," says Dr. Finster.
Studies conducted by Dr. H.O. Mori-shima and her associates here at the College of Physicians and Surgeons have shown that pain and apprehension may diminish placental blood flow and substantially diminish oxygen and nutrients to the fetus," says Dr. Finster. He explains that the stress of labor often causes the release of epinephrine and norepinephrine into the bloodstream. "These hormones have been shown to increase maternal blood pressure and pulse rate, and diminish placental blood flow," he says.

Occasionally a general anesthetic is necessary. "In some vaginal deliveries the uterus closes before the placenta can be removed," says Dr. Finster. "In these cases, to relax the uterus we use an anesthetic gas." Uterine relaxation may also be required to facilitate the delivery of twins or of a fetus in an abnormal position.

General anesthesia may also be used when a caesarean section is required. Constituting nearly 20 percent of all deliveries, C-sections are often performed when labor is thought to be too traumatic for the fetus. "Strong uterine contractions can reduce blood flow and produce adverse effects on sick or premature babies," explains Dr. Finster. He adds that sections are also performed for reasons such as fetal distress, lack of progress in labor, and previous uterine surgery.

ANESTHESIA NURSING: HIGH PRESSURE, QUICK THINKING

Ouida Harrison, nurse anesthetist, prepares a muscle relaxant for injection. Powerful muscle relaxants allow lower levels of general anesthesia than would be necessary otherwise.

During a hernia operation the patient's blood pressure suddenly starts to drop. Since the patient is young and healthy the nurse anesthetist reasons that the problem is probably the result of blood vessels dilating in response to anesthesia. She immediately increases the patient's intravenous fluid intake, and blood pressure quickly returns to normal.

"Even the least complicated operation can require some quick thinking on the part of the nurse anesthetist," says Margaret Lucas, chief nurse anesthetist at Presbyterian Hospital. She explains that the nurse anesthetist is responsible not only for a patient's anesthetic management, but for his airway management as well. "A tonsillectomy can run into serious complications if blood gets into the trachea," she says. "Once a patient is fully anesthetized he loses his ability to swallow or cough. That's why many operations, depending on the specific needs of the case, call for an endotracheal tube. The device keeps the airway open, allowing oxygen and anesthetic gas to enter and the waste products of respiration to leave. It also protects against entry of foreign products into the windpipe."

Working closely with anesthesiologists, PH's nurse anesthetists administer anesthetics and monitor equipment readouts.

"It's often high pressure work, but it's exciting," says B.J. Smith, who recently retired from full time service as chief nurse anesthetist at PH following 27 years of experience. "You're constantly monitoring blood loss, fluid replacement, working with powerful drugs to relax muscles, adjusting the depth of anesthesia and monitoring blood gases," she says. "It's a very dynamic specialty in nursing. You help patients when they're about as fragile as they can be. As a nurse anesthetist you really have to put together your knowledge of anatomy, physiology and chemistry."

Nurse anesthetists go through a regular nursing program and then spend two years studying anesthesiology. "At Columbia it's an intensive program," says Ms. Lucus. "For the first six months of specialized training nurses are in class eight hours a day. After this you start getting into clinical work. Even after you're certified you have to keep studying. Recertification is required every two years."

According to the American Association of Nurse Anesthetists (AANA), nurse anesthetists administer more than 50 percent of all anesthesia given in the U.S. Nurse anesthetists can be found not only in operating rooms, but in obstetric departments, inhalation therapy departments, emergency rooms, intensive care units and dental offices.

"It's a field that offers a great deal of potential," says Ms. Lucus. "It's also rewarding because it's a constant learning experience in a highly technical field."

ENHANCING THE PATIENT-NURSE RELATIONSHIP

Margaret Lee, a 26-year-old housewife, lives in Johnson City, a small town just north of Binghamton, NY. Until this year, she had never spent any time in New York City. To Mrs. Lee, New York seemed huge and unfriendly. So when she learned that she had a glomus jugular tumor, coming to Presbyterian Hospital for treatment was an upsetting prospect.

"It was terrifying to be sick and to have to come to New York. I had heard that the people here were not very nice," says Mrs. Lee. "But once I got to Presbyterian, I realized that there are a lot of friendly, helpful people in New York," she adds.

Mrs. Lee was admitted to a floor at the Neurological Institute which utilizes primary nursing. Her nurse was Joyce Warchalowsky, R.N. "We really worked well together," says Ms. Warchalowsky. "I got to know Mrs. Lee very well and was able to give her customized care," she says.

Primary nursing originated almost 15 years ago at the University of Minnesota Hospital, and is being adopted by hospitals across the country as the most patient-oriented type of nursing care. Primary nursing was initiated at PH in a modified form in 1977 at the Neurological Institute.

"The philosophy of primary nursing is that the nurse has a specific group of patients to follow from admission to discharge. The nurse plans the patients's care and is the prime advocate and communicator for the patient," says Martha E. Haber, R.N., vice president for Nursing.

Because the primary nurse is responsible for all the patient's nursing care 24 hours per day, a closer relationship based on more complete clinical knowledge results. As opposed to other types of nursing, the primary nurse checks all the vital signs of the patient regularly, administers medications, and maintains the patient's chart. So the nurse has contact with the patient more often.

"Nurses find primary nursing is more satisfying than other types of nursing," explains Marianne Burgunder, R.N., nursing care clinician on NI 5. "It gives nurses more autonomy and strengthens decision-making. Primary nursing allows nurses to evaluate their patients' progress more easily," she adds.

Dr. Joseph Sweeting, chief of service on PH 14W, where primary nursing is also used, agrees. "The nurses are more informed about their patients' problems. Primary nursing seems to me to be a real advantage," he says.

But patients are undoubtedly those who benefit most from primary nursing. Each patient has only one nurse, so he or she knows whom to talk with if a problem or question arises. And because the primary nurse spends more time with each patient, the patient's individual needs can be met more effectively.

And certainly it is more comforting to the patient to have one nurse who really knows his needs. "I know I've made Mrs. Lee feel better and more secure here," says Ms. Warchalowsky. Says Mrs. Lee, "Having a one-to-one relationship with my nurse has made all the difference to me during my stay."

"We plan to initiate primary nursing in other areas when staff numbers and readiness permit. It certainly is a desirable way to provide nursing care," says Ms. Haber.

Doreen Cosbert, R.N., helps her patient exercise. Primary nursing helped enhance Ms. Cosbert's relationship with her patient.

NEW DELIVERY SUITE WILL EMPHASIZE CHILDBIRTH ALTERNATIVES

A young mother gives birth in one of PH's traditional delivery rooms. New birthing rooms will provide a more home-like atmosphere. Photograph by Elizabeth Wilcox.

The Obstetrics and Gynecology Service at PH would like to announce a new arrival: It's the new labor and delivery suite on the twelfth floor of the Center for Women and Children.

The new facility will feature three birthing rooms specially designed to provide a home-like atmosphere. "The rooms will be located in the quietest area of the floors so that parents can feel as if they are separated from the hubbub of the hospital," says Dr. Harold Fox, a specialist in maternal/fetal medicine.

PH's new birthing rooms will look more like hotel rooms than hospital rooms. They will be decorated with draperies, bedspreads and wall paintings. But more significantly, "They will combine all the safety of a hospital birth with the comforts of home," says Nancy Boccuzzi, R.N., program coordinator for Obstetrics and Gynecology.

In an effort to emphasize the pleasant atmosphere without diminishing efficiency, emergency equipment will be kept out of sight. "We don't want parents to feel intimidated by ominous-looking medical devices," adds Ms. Boccuzzi.

The birthing rooms will also emphasize comfort. "One of the nicest features of the birthing rooms for the mother is that she can go through labor, delivery and recovery in the same bed," says Jane McConville, R.N., associate director, maternal-child nursing. "She will not have to be moved from one bed to another when she is ready to deliver," Ms. McConville says.

"So the birth process can go uninterrupted from labor right through to recovery in the same room," adds Dr. Fox. Not only is this more pleasant for the mother, but it strengthens the family feeling. "The bonding between mother, father and newborn is very much enhanced," says Dr. Fox.

Next to the birthing rooms there will be four traditional labor rooms, two traditional delivery rooms and a transitional care nursery. The nursery, one of the first in the U.S. to be located within steps of a delivery area, allows unhealthy infants to be stabilized before they are moved. "We can't afford to move these babies until they are stabilized; they must have immediate care. This nursery gives us time to evaluate the infants before transporting them to the appropriate nursery," says Dr. Edward Bowe, clinical director of the Obstetrical Service.

Also close by the delivery rooms will be an area for high-risk mothers. Some of these mothers come from other communities throughout the tri-state area and are transported by helicopter and ambulance to PH.

Since the new suite will be on the same floor as the Neonatal Intensive Care Unit, high risk newborns also can be moved quickly from the Transitional Nursery to highly specialized personnel and life support equipment in a facility recognized as one of the finest in the nation.

New Trustee Appointed at PH

Mr. Edward H. Michaelsen

Mr. Edward H. Michaelsen was named a member of Presbyterian Hospital's Board of Trustees on June 16th. Mr. Michaelsen is vice chairman of the Phelps Dodge Corporation, and is on the board of directors of seven major companies. He is also executive director of Carnegie Hall and one of the directors of the Greater New York Chamber of Commerce and Industry.

"We are delighted that Mr. Michaelsen has joined our Board of Trustees," commented Dr. Felix E. Demartini, president of the Hospital. "He brings with him considerable corporate management experience."

Dr. Goldberger to Become Sole Provost at Columbia

Dr. Robert Goldberger, who joined Columbia University in July, 1981 as provost and vice president for Health Sciences, will become the single provost of Columbia University in July 1983. With the recent departure of Peter Likins, provost for the other professional schools, Dr. Goldberger took over his responsibilities, and will also take on responsibility for the Arts and Sciences when Fritz Stern leaves his position as provost to return to his Professorial duties next July. Dr. Goldberger is now Chairman of a Search Committee to find a new Vice President for Health Sciences.

Memorial Service Honors Dr. Atchley

A memorial service was held in honor of Dr. Dana W. Atchley in the Presbyterian Hospital Chapel on Wednesday, July 28. Offering tribute were Dr. Felix E. Demartini, president of the Hospital, and Dr. Stanley E. Bradley, Samuel Bard Professor Emeritus of Medicine. Dr. Atchley passed away on June 27. Memorial contributions may be sent to the Dana W. Atchley Endowment Fund of the Presbyterian Hospital, Assistant Treasurer's Office, 622 West 168th Street, New York, N.Y., 10032.

Symposium Caps Week-Long Radiologic Technology Exhibit

Radiologic technology was the subject of a recent exhibit in PH's Exhibition Center. The week was capped by the Third Postgraduate Symposium on Radiologic Technology.

New Administrators Welcomed

On June 15 CPMC's Faculty Center was the site of a small party to honor three new administrators: Pat Chambers, Radiology administrator, William Warfield, director of Physical Plant, and Dave Libenson, director of Support Services.

New Radiology Director Appointed

Dr. David Baker

Dr. William Seaman

Dr. David Baker is the new director of the Radiology Service, chairman of the Department of Radiology and James Picker professor of Radiology. He succeeds Dr. William Seaman. Dr. Baker, who has been director of Pediatric Radiology at PH since 1959, is a past president of the Pediatric Radiology Society, the New York Roentgen Society, and the Eastern Radiological Society. In 1981 he was nominated a distinguished alumnus of the Boston University School of Medicine. Dr. Baker joined Presbyterian Hospital in 1959 and became director of Pediatric Radiology in 1960.

Dr. Seaman plans to continue to participate in all the activities of the Service. Dr. Seaman was director of the Service for 26 years and was recently made an honorary fellow of the Royal College of Radiology. Currently, there are 33 honorary fellows of the Royal College, of whom only ten are Americans.

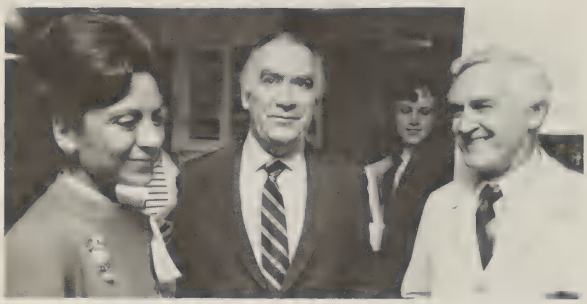
"Dr. Seaman has been a loyal and valuable associate of the Medical Center," comments Dr. Felix E. Demartini, president of the Hospital. "He is an internationally recognized leader in the world of radiology." Dr. Donald Tapley, dean of the College of Physicians and Surgeons, adds, "It has been a great honor to have had Dr. Seaman as chairman of the department. He has added greatly to both the School and Hospital through his outstanding work."

Kosoff Memorial Lecture

"Pathogenesis of Respiratory Failure" was the subject of this year's Stephanie Lynn Kosoff Memorial Lecture. The lecture was delivered by Dr. Kenneth L. Brigham, director of the Division of Pulmonary Medicine at Vanderbilt University Medical Center in Nashville, Tenn. The lecture was hosted by the Department of Pediatrics.

From the right are: Dr. Kenneth Brigham, Mr. and Mrs. Burton Kosoff, Dr. Robert Mellins and Dr. Michael Katz.

Governor and Mrs. Carey Visit Medical Center



Governor and Mrs. Hugh Carey visited Presbyterian Hospital's Neonatal Intensive Care Unit in June. The visit was designed to draw public attention to a task force headed by Mrs. Carey on the role of nutrition in New York State. With them is Dr. L. Stanley James, director of the Division of Perinatology.

Recognition Tea Honors 1982 Nursing School Graduates

A recognition tea for the forty 1982 graduates of the Edna McConnel Clark School of Nursing was held recently at Maxwell Hall. The event was highlighted by the presentation of special awards for outstanding clinical practice to Joanne Magariello and Pat Mauro. In addition to recognizing these two graduates, Martha Haber, vice president for Nursing, gave recognition to the following nominees: Shawn Boyle, Pat Hitsous, Roseann Kerr, Jane Jenkins, James Martin, Yvonne Milliner, Ann O'Leary, Maryann O'Sullivan, Angelina Rivera, Diane Stein, Viana Taalib-Din and Elizabeth Zurich.

Citizen's Award Given To PH Security Director

The 34th Police Precinct Annual Awards Dinner given by the 34th Precinct Community Council was highlighted this year by a citizen's award given to Tim Burgunder, director of Safety, Security and Parking at Presbyterian Hospital. The event took place at Saint Spyridon Church in June. The award goes to a citizen who has performed an outstanding job in contributing to law enforcement in the community.

Heart Club Day Brings Patients, Doctors Together at Presbyterian

Approximately 700 people, including 350 children who had had heart surgery at PH, were treated to festivities during Heart Club Day, which was held on June 12 at CPMC.

The event featured a number of celebrities including Becky Snyder from the Broadway play "Annie," Spider Man, George Bamburger from the Mets, Nancy Montgomery and Laura Lieben from the Musicians' Emergency Fund, magician Michael Chaut, and a variety of clowns.

Pediatric Hematology Raffle

The annual raffle for the benefit of the Babies Hospital Hematology Research Fund raised more than $4,000 on June 24. Mr. and Mrs. George Halpin and Mr. and Mrs. Edward Sot organized the event with the help of Dr. Anneliese L. Sitarz.

The five raffle winners were: Christy Allman, William Robles, Kevin Coyle, Scott Scudieri and Craig Scudieri. Mrs. James Scudieri was instrumental to the success of the raffle. The most tickets were sold by Mrs. DeWitt Keen and Mrs. Carolyn Ortiz and her family. Mrs. Margie McCarthy and Mr. Jimmy Callahan and many other staff members also helped to make the raffle a success.

Associate Degree Nursing Program Holds Its First Alumni Luncheon

An alumni luncheon for the Associate Degree Nursing Program of the Edna McConnell Clark School of Nursing was held in June. This is one of the few programs to award a one year associate degree. "Many of the students in this program started nursing as LPNs to get a feel for nursing. This program allows them to broaden their skills and knowledge in nursing and become R.N.s without having to start from scratch," says Martha E. Haber R.N., vice president for Nursing. "It's a unique program that builds on the practical experience our students have had as L.P.N.s," she adds.

The program has about 500 graduates. About 40 graduates and faculty attended the luncheon.

Neonatal Intensive Care Unit Celebrates "Alumni" Day

Darnel Carter (left) and Brenda Anderson get together with Kermit (Mark Stefanski) and Yellow Bird (Joseph Hinson) all of 12 North, Center for Women and Children. The occasion was the annual Alumni Day for the Neonatal Intensive Care Unit. The event, which drew some 300 patients and their families, took place in the Doctors' Dining Room on June 13 and was organized by the 12-North nursing staff. *Photo by Augie Fernandez.*

FOOTNOTES

DENTISTRY: A Testimonial Dinner in honor of **Dr. Fred Rothenberg** was recently held at the Princeton Club. Dr. Rothenberg, a member of the faculty of Columbia University School of Dental and Oral Surgery for 43 years, was honored by 100 colleagues, many of them former students, for his outstanding devotion to teaching and superb record of achievement in both Oral Surgery and Endodontics.

Dr. Sidney Shapiro has been awarded the prestigeous Columbia University Alumni Federation Medal. The award, established in 1933, is given for "conspicuous alumni service."

REHABILITATION MEDICINE: **Dr. John A. Downey** and **Dr. Niels L. Low** (Neurology) are the editors of a recently released book: *The Child with Disability Illness—Principles of Rehabilitation, Second Edition.* In five major sections the book takes an in-depth look at chronic medical illnesses; disorders of the neuromuscular system; musculoskeletal disorders; psychosocial problems; and dental disorders.

PUBLIC HEALTH: **Dr. Melanie Dreher** has recently published a book on marijuana use and users in Jamaica. The book is entitled *Working Men and Ganja.*

PEDIATRICS: **Dr. Anneliese L. Sitarz** spoke at a symposium on "Nursing Care of Children and Adolescents with Cancer" at the New York Academy of Medicine. The event was sponsored by the New York City Division of the American Cancer Society.

PSYCHIATRY: The new research facility adjoining the Psychiatric Institute has been named the **Lawrence C. Kolb** *Research Laboratories* in honor of Dr. Kolb, formerly the director of PI, chairman of the Columbia Department of Psychiatry, director of the Psychiatry Service at PH, and currently a Special Lecturer in Psychiatry. The Kolb Research Laboratories will be officially opened in October, 1982.

SURGERY: **Dr. Robert Bertsch** has been elected Teacher of the Year by the P & S class of 1982.

RADIOLOGY: **Drs. Walter E. Berdon** and **David Baker** presented a paper at the annual meeting of the Society for Pediatric Radiology in May. The paper was entitled "The Coexistence of Pulmonary Artery Sling and Tracheal Stenosis — A Lethal Combination."

ANESTHESIOLOGY: **Dr. Lester C. Mark** has recently published a book entitled *Pain Control: Practical Aspects of Patient Care.* Dr. Mark is back following a leave of absence as Fulbright Senior Scholar at the Victorian College of Pharmacy in Melbourne, Australia.

PSYCHIATRY: A book by **Dr. Richard A. Gardner** entitled *Family Evaluation in Child Custody Litigation* was recently published by Creative Therapeutics. The book was written to assist child psychiatrists in both evaluating families in child custody conflicts and providing testimony in court.

DERMATOLOGY: **Drs. Leonard C. Harber** (PH) and **David R. Bickers,** formerly of PH, are the authors of *Photosensitivity Diseases, Priniciples of Diagnosis and Treatment.* The book is the first to provide a comprehensive view of this field.

Dr. Robert R. Walther has been elected to Fellowship in the 54,000-member American College of Physicians, a national medical specialty society. Dr. Walther will be honored during a convocation ceremony at the College's annual session in San Francisco in April, 1983.

Dr. Helen Curth, assistant clinical professor of Dermatology, died on June 17. Dr. Curth was internationally known for her work in acanthosis nigracans and its systemic manifestations. She was 83 years old.

MICROBIOLOGY: **Dr. Paul Ellner** recently presented a series of lectures on the "Role of Normal Commensal Flora in Health and Disease."

MEDICINE: **Dr. J. Thomas Bigger, Jr.,** recently gave the following lectures: "Recent Advances in the Diagnosis and Treatment of Cardiac Arrhythmias," "The Year After Myocardial Infarction: the Sources of Risk and an Approach to Improving Survival,""Mechanisms of Cardiac Arrhythmias in Acute Myocardial Ischemia, Subacute Myocardial Infarction and Chronic Myocardial Scarring," and "An Electrophysiologic Approach to the Medical or Surgical Management of Cardiac Arrhythmias in Man."

PSYCHIATRY: **Drs. Donald S. Kornfeld** and **Jerry [redacted] Finkel,** in association with other members of the Psychiatric Consultation and Liaison Service, have just published a book entitled "Psychiatric Management for Medical Practitioners."

ORTHOPEDICS: **Dr. Charles S. Neer II** was recently a guest lecturer at the University of Paris, Bichat Hospital.

SCHOOL OF NURSING: **Elsa Poslusny** has edited the book *Nursing and Thanatology,* published in April, 1982.

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THE MODERNIZATION PROGRAM — AN UPDATE
TRANSPLANTING AND LENGTHENING BONES
ATTACKING THE CAUSES OF BONE DISEASE

NOVEMBER 1982

STETHOSCOPE

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IMPORTANT NOTICE TO OUR READERS

You are invited to participate in Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity or unitrust, life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

The Modernization Program

The Presbyterian Hospital's $485 million, multi-faceted modernization program has come into much sharper focus since an article on the subject appeared in last January's STETHOSCOPE.

The proposed program is geared to provide a diversified array of health care services ranging from the most sophisticated to routine, primary care and home care for local residents. The program includes renovation of some existing facilities, construction of a major inpatient unit overlooking the Hudson river, construction of a 300-bed community hospital at the northern end of Broadway, creation of an 80-bed residential health care facility, and the establishment of a home health agency which would provide health care services for patients who can live at home with professional support.

PH's program is designed to counteract the dangerous decline in the number of hospital facilities and physicians in the Washington Heights/Inwood community which has resulted from the closing of four area hospitals and the exodus or retirement of most of the area's family doctors. The program will also reverse the trend toward fragmentation of existing facilities (and corresponding operating inefficiencies) which has gradually developed since the Medical Center was founded in 1928.

One notable feature of the entire program is that operating savings equal to the cost of renovation and new construction are expected to result over the 25 year lifespan of the program from centralizing the Hospital's patient care, diagnostic and treatment facilities, and from decreasing energy consumption and maintenance costs.

More specifically, savings are expected to be realized from consolidation of the Hospital's 60 nursing stations, ten radiology suites, five operating suites and other high technology services. Modernization of the Hospital at the CPMC site is scheduled to begin in 1983, with completion in 1988, including alterations.

As with the main facility, PH's new community hospital will also help conserve precious funds while improving community services. Because the 300-bed hospital will be geared to treating less complex cases than those seen at CPMC, and because support services such as food service and laundry will not have to be duplicated in the new facility, costs will be much lower.

With 24 beds set aside for obstetrical care, the new facility will be able to accommodate 2,000 of the Washington Heights/Inwood community's 3,600 annual births. The area has a birth rate 75 percent higher than the rest of Manhattan.

Commenting on the proposed facility, Mr. Edward H. Noroian, Executive Vice President of The Presbyterian Hospital, said, "The community hospital will allow us to treat more patients in a more cost effective manner, while enhancing health care quality and availability."

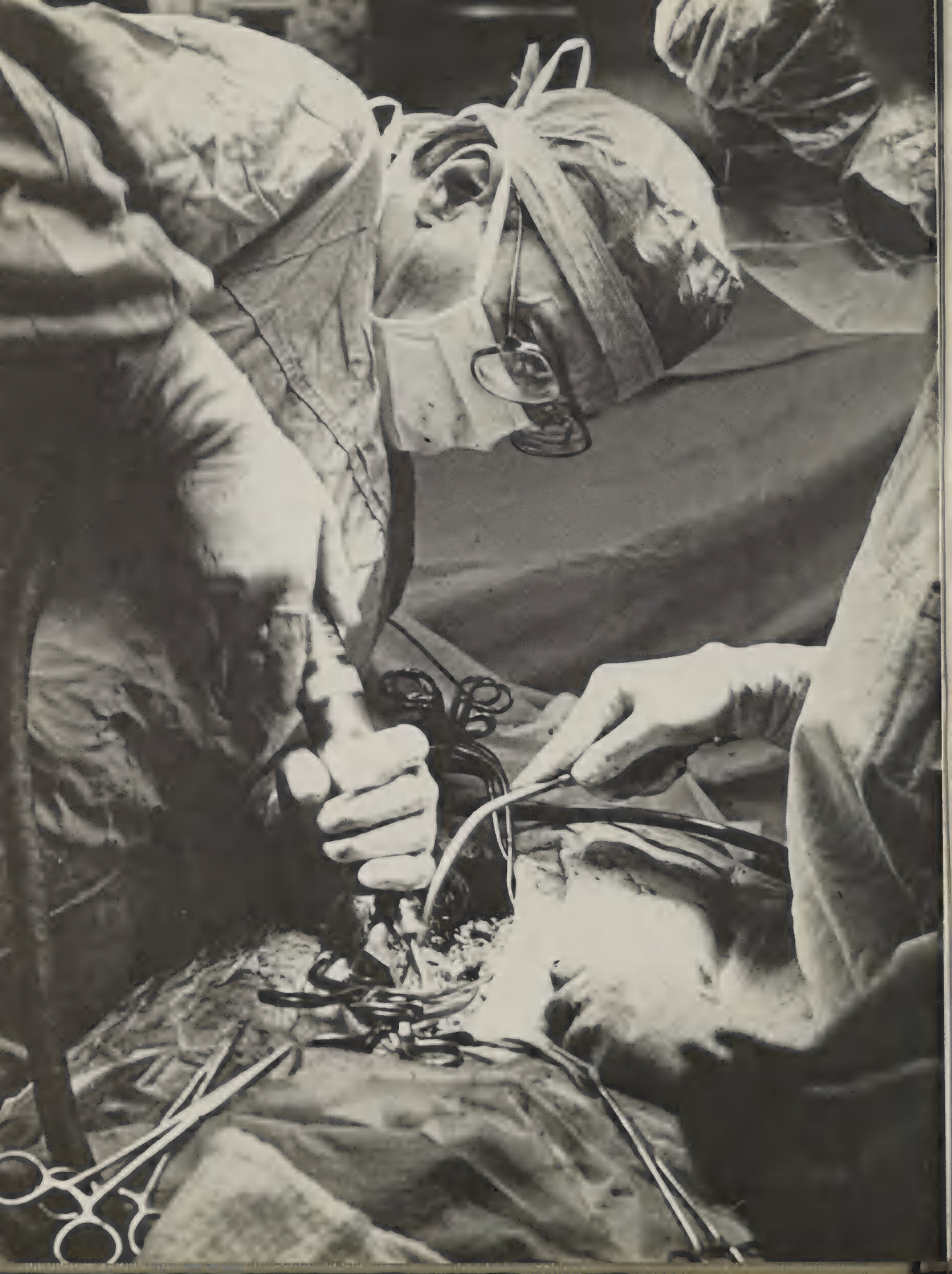
Plans to construct the new hospital have been submitted to the State's Department of Health and the NYC Health Systems Agency. Groundbreaking for the facility is planned for mid-1983. With approval this year, the new hospital could open in 1985.

But the community's highest priority health care needs are not limited to its high birth rate or the erosion of health care facilities in the community. The area's large elderly population also requires specialized services. In an effort to address these needs, PH has asked for the authority to create lower-cost alternatives to hospital care, such as a residential health care facility and a home health agency.

The former would include 80 nursing home beds, providing short-term, restorative rehabilitation and psychiatric-geriatric care. The long-term care facility is scheduled to be completed by 1988 and is a component of the renovation program.

Patients discharged from the residential facility and others would be encouraged to live at home with the assistance of the home health agency. The agency would provide services such as nursing and physician care, physical therapy, occupational therapy, speech therapy, personal care and housekeeping. "Instead of institutionalizing the elderly and disabled," said Mr. Noroian recently, "The Presbyterian Hospital will be able to provide high quality care at home with greater convenience and at lower cost to the patient."

Routine ambulatory health care would be encouraged by an Ambulatory Care Network Corporation. The ACNC would be a joint venture with the Community Board and other community groups and is expected to seed the area with primary care physicians partially subsidized through an incentive program provided by the Hospital. The ACNC would help to assure that routine ambulatory care is available and accessible to all area residents. ■



RESTORING FORM AND MOTION

The blurr of the carpenter's hammer as it drives a nail into a beam; the crack of a baseball bat as it connects with its speeding target; the roar of applause after a concert—nearly everything we see and do is based on the body's ability to smoothly and painlessly coordinate movement while its parts remain rigid. The mechanism which gives us these abilities—or negates them—is the skeleton and its extraordinary system of joints.

Whether brushing our teeth or scrambling after a ball on a tennis court, most of us take movement for granted. But for millions of Americans the cost of movement is pain, and for thousands more, bone and joint diseases make movement altogether impossible.

Back pain and spinal disorders, one of the most common causes of orthopedic problems, cause impairment of activity in twelve to fifteen million Americans a year, while joint diseases ranging from rheumatoid arthritis to avascular necrosis (diminished blood flow to parts of the skeleton) result in approximately 100,000 total hip joint replacements in the U.S. each year. Other major causes of orthopedic problems include trauma (particularly to the hands), cancer, congenital defects and a variety of hormonally or genetically linked conditions such as Paget's Disease, hyperparathyroidism and osteoporosis.

At The Presbyterian Hospital, one of the foremost centers in the nation for the treatment of a variety of bone-related conditions, over 50,000 outpatient encounters and nearly 3,000 inpatient encounters occur each year for orthopedic problems.

"The field of orthopedic treatment has made enormous strides since the late 1800s when braces and buckles were the only therapeutic tools," comments Dr. Alexander Garcia, director of PH's Orthopedic Surgery Service. "In the 1940's orthopedics became a more surgically oriented specialty. Since then we've learned how to manufacture and install artificial joints, transplant bones, straighten deformed spines and even lengthen limbs. Many of these advances will become more important in the future as life-span increases and our population ages."

THE SPINE: HIGH RISK AREA

Thirty-three vertebrae and an extraordinarily exact system of ligaments, cartilages and muscles give the human spine its tremendous strength and flexibility. But because of its complex anatomy and high level of usage, the spine frequently is associated with orthopedic problems.

Four out of five people are afflicted by chronic, incapacitating back pain at least once in their lives. The causes of pain range from common degenerative disorders such as osteoarthritis, spondylosis, slipped or herniated discs and spinal stenosis (narrowing), to trauma, including sprains and fractures. Infections of the spine are a third but much less common cause of severe back pain. Circulatory disorders such as aortic aneurysms and arteriosclerosis, and inflammatory disorders such as rheumatoid arthritis also are associated frequently with severe pain.

A separate, but extremely large area of spinal problems involves abnormal curvatures.

STRAIGHTENING THE SPINE

To her friends 13-year-old Janet did not appear to have an unusually curved spine, but a routine physical examination at school uncovered the problem and Janet was referred to PH orthopedic surgeon Dr. Hugo A. Keim. His diagnosis: scoliosis.

"Approximately three to four percent of the population in the U.S. is affected by scoliosis, a lateral curvature of the spine," says Dr. Keim. "In most cases the disorder is insignificant, however, it can occasionally become very severe and require either bracing or spinal surgery for correction." He adds that scoliosis is genetic in origin and that it occurs about seven times more frequently in females. "A common misconception about the disorder," he says, "is that it stops progressing after adolescence. Our evidence has shown this to be incorrect. Because of this it is important that we halt the disorder as early as possible."

Bracing is particularly effective in treating curves under 30°, but many patients opt for surgery because of the inconvenience of wearing a brace for

X-ray shows Janet's spine before surgery.

years. In Janet's case, surgery was recommended because of the rapid progression of her condition. "Patients in this category require surgical attention to avoid serious cardiac and pulmonary problems later in life," says Dr. Keim.

Surgery to correct scoliosis usually involves exposing the spine, implanting special (Harrington) hooks above and below the curve and installing a rod between the hooks. "The Harrington Rod jacks the spine into a straight line," says Dr. Keim. Once the spine has been straightened, the area around the rod is packed with matchstick-size bone fragments taken from the pelvis. With time, the spine, the rod and the bone fragments fuse to form a solid mass.

In cases involving extremely severe spinal deformities such as complete absence of the lamina (the outer portion of the spine) or in which a fixed cast or braces are unacceptable after surgery, a technique called the Luque system provides an alternative to Harrington rods.

Introduced to the U.S. only five years ago, the Luque method is now used at a handful of medical centers across the country. The method involves performing multiple lamenectomies and subsequently passing wires under the lamina and then around special rods.

Continued on page four

Using a powerful bone cutting tool, Dr. Hugo Keim prepares a patient's spine for insertion of a Harrington Rod.

Yet another straightening procedure, which is known as the Dwyer technique, calls for inserting a screw in each vertebra and then connecting the screws with a steel cable. "We crank the cable to a measured pressure of about 200 pounds, remove the disc material between the vertebrae and then fuse the spine," explains Dr. David P. Roye, Jr, who specializes in these and other spinal surgery techniques. He adds that the Luque and Dwyer techniques are so successful in distributing the pressure imposed by straightening that only a light brace worn at night is necessary following surgery.

Doctors adjust the curvature of a Harrington rod. The curvature of the rod will determine the curvature of the patient's spine.

ELECTRONIC SYSTEM GUARDS AGAINST INJURY

How do spinal surgeons know if they are accidentally harming a patient's spinal cord during an operation? At PH, the answer is sensory evoked potential monitoring, a system in which electrodes are placed above and below the site of surgery to receive and transmit electrical impulses. The impulses are used to periodically test spinal cord function.

At The Presbyterian Hospital minicomputers have made possible a unique, non-invasive version of the technique, which provides surgeons with an instant method for quantifying and interpreting evoked potential parameters. "The system actually gives us information about whether the responses are normal for a particular patient," says Dr. Erwin Gonzalez of the Rehabilitation Medicine Service, who developed the refined technique.

Evoked potential readings are analyzed by a computer before surgery and are repeated frequently as the operation proceeds. "The technique has saved more than one patient from total paralysis," says Dr. Keim. "Without it there would be no way of checking for neurological damage without waking the patient. This refined evoked potential monitoring system has enabled us to treat patients safely in cases where the risk otherwise would have been too great."

TREATING SCOLIOSIS WITH ELECTROSPINAL STIMULATION

A select group of patients with spinal curves between 20 and 40 degrees may soon be able to avoid braces or surgery altogether thanks to a recently developed electrospinal stimulation system. The system, which was introduced clinically in the U.S. at PH, has achieved an 80 percent success rate in children with curves under 35 degrees during a six year trial period.

Electrospinal stimulation requires a simple procedure to install a miniature radio receiver and connecting platinum wires in the convex side of the curve. When stimulated by a radio transmitter which the patient turns on at night, the surface system causes surrounding muscles to contract, eventually causing permanent straightening of the spine.

DISSOLVING BACKACHES

For the thousands of Americans who are affected each year by the pain and loss of sensation resulting from a herniated disc, a new drug may soon offer an alternative to surgery in select cases. Chymopapain works by actually dissolving the inner vertebral disc material. The material causes pain in certain individuals when it is squeezed out by vertebrae and pushed against adjacent nerves.

Expected to be approved by the FDA within the next few months, the drug will probably eliminate the need for surgery in approximately 20 percent of patients who now require an operation for low back pain. "The drug has demonstrated a high success rate during testing in Canada," says Dr. Garcia. ■

TRANSPLANTING AND LENGTHENING BONES

Watching five-year-old Melissa Perez play in front of her New Jersey home no one would think that only two years ago she was a possible candidate for leg amputation. Melissa was born with neurofibromatosis, a rare congenital disorder. The disorder may cause sections of bone to soften. By the time Melissa was three the shin bone (tibia) in her right leg was so soft that the leg bowed as much as 45 degrees, even with a cast.

Melissa is one of 28 children who have had fibular transplants at The Presbyterian Hospital. Fourteen of the children would have faced amputation had it not been for this rare bone transplantation procedure.

"Fibular transplants are recommended in cases that do not respond to conventional bone grafts or electromagnetic healing," says Dr. Harold Dick, chief of Pediatric Orthopedic Surgery at PH and one of the first doctors in the U.S. to perform the procedure.

The operation, which usually takes about nine hours, involves intricate microsurgery to connect the transplanted bone to surrounding blood vessels. Microsurgery enhances the operation by restoring blood flow to the marrow and results in a greatly reduced healing time. In just months, as weight is gradually applied to the leg, the transplanted fibula thickens until it is strong enough to bear the child's full weight without braces.

In addition to being useful as a treatment of last resort for neurofibromatosis in children, fibular transplants can be used in treating infections and bone tumors.

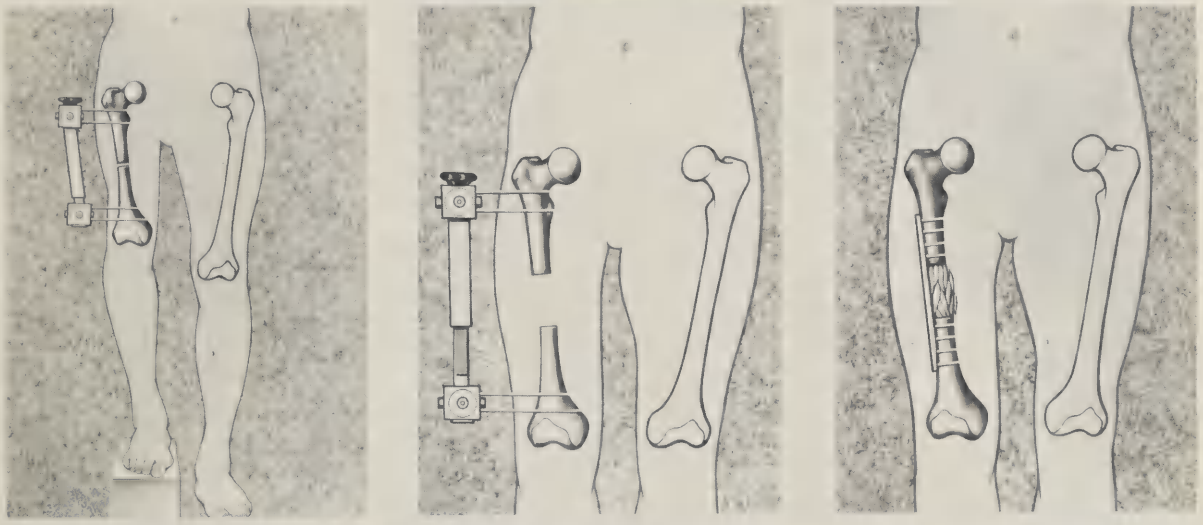
TWO INCHES FROM HEALTH

In most cases, bone injury is much less serious for children than for adults. Children's bones are less likely to fracture and more likely to heal rapidly. But they are also more susceptible to injury to the growth plates, the areas responsible for most longitudinal growth. Location, which has been performed on over 100 children at The Presbyterian Hospital, calls for cutting the affected bone and gradually cranking the separated portions apart by means of an external device which is pinned to the segments. The limb is lengthened by about 2 mm per day. The maximum separation is about 2 inches.

"Once we've achieved the desired length, we introduce bone fragments taken from another part of the body and fuse the parts," says Dr. Dick. "Lengthened bones have normal strength after a few months."

Although 99 percent of limb lengthening operations involve the legs, the lengthening technique can be applied to the arms, as well. Recently, Dr. Dick operated on two children each of whom had a two inch discrepancy in arm length. Both were successfully lengthened.

The patients, a 13 year-old girl and an eight-year-old boy, had injured growth plates resulting from benign tu-



Pictured are the three steps involved in leg lengthening: cutting the affected bone; cranking the separated portions apart with an external device, and filling in the space with bone fragments to create a fusion.

Dr. Dick explains that the procedure involves the removal of a piece of healthy bone from the fibula of the normal leg. (The fibula is the thinner of the two long bones in the lower leg.) "The fibula is not an essential bone. Removing it does not weaken the leg, because the tibia bears almost all the weight," he says. "Once the living bone has been removed it can be transplanted with its blood supply intact to replace the diseased bone tissue removed from the other leg."

cated at the upper and lower ends of most bones, growth plates can be permanently switched off if fractured or crushed. Growth plates may also be damaged as a result of infection. "In either case," says Dr. Dick, "growth is permanently halted in the affected bone."

But for children with injured growth plates, as well as others with congenital shortness of one limb, an innovative procedure can lengthen the affected extremity. The extremely rare operation, which has been performed on over 100 children at The Presbyterian Hospital, calls for cutting the affected bone and gradually cranking the separated portions apart by means of an external device which is pinned to the segments. The limb is lengthened by about 2 mm per day. The maximum separation is about 2 inches.

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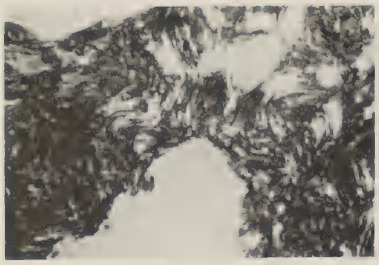
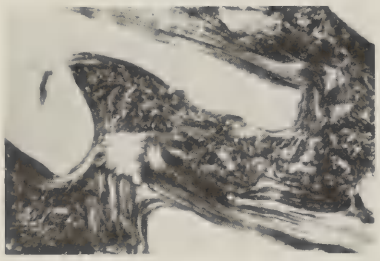
The patients, a 13 year-old girl and an eight-year-old boy, had injured growth plates resulting from benign tumors and infection, respectively.

"Humerus lengthening operations are very, very rare," says Dr. Dick, who estimates that only about six arm lengthening operations have ever been performed in the United States. "Arm lengthening is generally not performed unless the discrepancy in length is very significant. Whereas a discrepancy in leg length affects the spine and the rest of the skeleton, arm length discrepancies have no similar repercussions," says Dr. Dick. ■

ATTACKING THE CAUSES OF BONE DISEASE





Using polarized light microscopy, bone specialists at CPMC photographed these pagetic bone crossections. The pre-treatment section, (top) shows characteristic "woven" bone, which is abnormal. The post-treatment section shows restoration to a more normal archetectural pattern.

A typical leg affected by Paget's Disease (left) is contrasted with a normal leg in X-rays of two patients.

You may think that your skeleton is one of the few parts of your body that stays the same throughout your life. But the human skeleton is far from static. Old bone is constantly being dissolved by cells called osteoclasts and replaced with new bone. Five to 15% of normal adult bone is resorbed and replaced every year.

But the equilibrium between resorption and replacement can be disturbed by a variety of diseases. Recently, a collaborative effort involving The Presbyterian Hospital, the College of Physicians and Surgeons and Helen Hayes Hospital in Haverstraw, NY, has been organized to study Paget's Disease, hyperparathyroidism and osteoporosis, all three of which affect the delicate balance between bone resorption and replacement. Embodying this clinical research effort is the New York State Regional Bone Center. Many patients in the Bone Center program are treated at CPMC's General Clinical Research Center (G C R C).

"The Bone Center gives us access to data on a much larger patient population than either hospital would have separately," says Dr. Robert E. Canfield, director of the GCRC and one of the founders of the Bone Center.

Over 2 million people in the U.S. have Paget's Disease, a chronically disabling disorder that generally occurs late in life. Paget's Disease causes a form of arthritis and hearing loss, and can cause the bones, which become abnormally large in one or more areas of the body, to compress adjacent nerves. Drs. Canfield, Thomas Jacobs and Ethel Siris, all of CPMC, are studying Paget's Disease and have already successfully controlled the disorder in some 200 patients.

"Paget's is caused by an unknown agent which increases the rate at which bone is dissolved by the osteoclasts by up to 20 fold. This disrupts the normal rebuilding process. Diseased bones are more massive, less dense

and have more blood vessels than normal bone. The end result is that bones are weaker and are more prone to fracture," says Dr. Canfield.

"It seems that people are born with a predisposition to Paget's Disease. It runs in families and is uncommon in black and Asian populations," adds Dr. Canfield. He speculates that Paget's Disease may be caused by a common childhood virus which remains in the osteoclasts and then transforms them into pagetic cells later in life.

Treatment is directed at slowing the abnormal increase in bone turnover. Patients receive diphosphonate therapy, which CPMC had a pioneering role in developing. Diphosphonate inhibits the osteoclasts from dissolving bone.

"Although this therapy doesn't cure the disease, and won't change pagetic bone back to normal, it may prevent pagetic osteoclasts from destroying bone that is not yet affected by the disease. We use diphosphonate therapy because it can be administered orally, is less expensive than other treatments and has few side effects," says Dr. Ethel Siris, who has been working with Dr. Canfield since 1976. The doctors are currently looking at the long-term effects of the therapy, and at whether it is appropriate for all patients.

Another team of Bone Center investigators is studying hyperparathyroidism. CPMC Drs. John Bilezikian and Elizabeth Shane are conducting a program in long-term management of the disease.

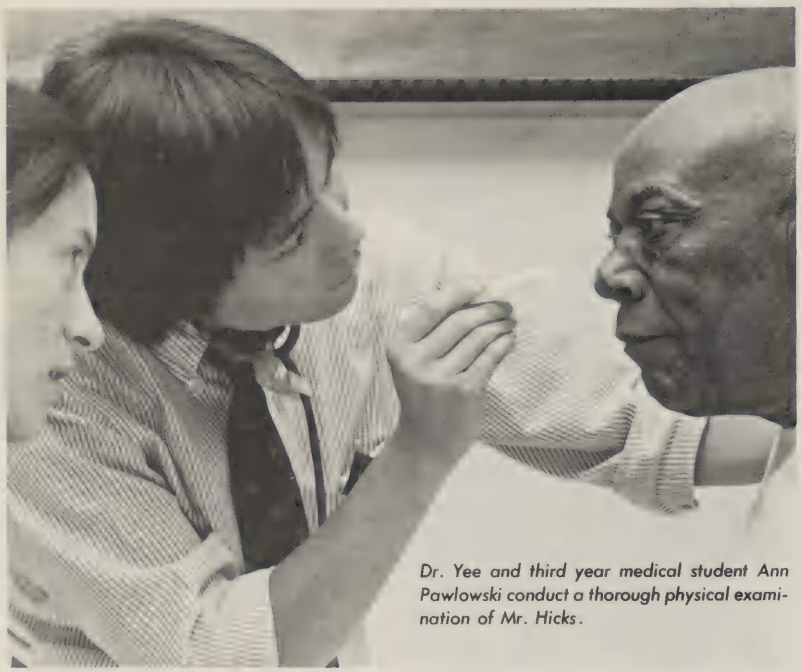
Severe hyperparathyroidism raises the level of calcium in the blood, which affects the resorption/replacement equilibrium of the bone. Symptoms include sleepiness, lethargy and coma, and the disease can lead to death if untreated. Recently, following the installation of sensitive testing equipment at the Bone Center, a low-grade hyperparathyroid condition has been detected. Although this condition does not necessarily lead to severe hyperparathyroidism, Drs. Bilezikian and Shane are trying to determine if it produces any deleterious effects, and if it leads to the more severe condition in later life.

PH patients with post-menopausal osteoporosis also are benefitting from the activities of the Bone Center. Osteoporosis is a condition in which more bone is dissolved than is replaced, resulting in a net loss of bone and weakening of the skeleton. It often occurs in post-menopausal women because these women have decreased levels of estrogen, a key regulator of bone health. Estrogen therapy has been shown to retard bone loss in these women from 2% of the skeleton per year without estrogen treatment to 0.25% per year with treatment.

For some women, according to Dr. Robert Lindsay of Helen Hayes Hospital, a world-renowned expert in the treatment of osteoporosis, estrogen therapy can make the difference between leading a normal life and being subjected to multiple fractures which may not heal. ■

In the Bone Center's CLINFO data lab at CPMC are Dr. Robert Lindsay (standing) of Helen Hayes Hospital, Don McMahon, CLINFO systems manager, and Dr. Ethel Siris of The Presbyterian Hospital, a specialist in bone diseases. The lab is essential in coordinating data on thousands of patients with bone diseases.

A LONG DAY'S JOURNEY



Dr. Yee and third year medical student Ann Pawlowski conduct a thorough physical examination of Mr. Hicks.

Four p.m., September 17, 1982. Dr. Arthur Yee hasn't slept in 36 hours. It is a day like all other days.

Dr. Yee is in his first year of a three year residency program in Medicine at The Presbyterian Hospital. During the first, called the internship year, doctors rotate through various medical units spending two to six weeks in each. The internship year is considered by many to be the most grueling of the three; every third night interns must be on call at the Hospital. With only every third weekend off, every day feels like Monday to Dr. Yee.

What does Dr. Yee do during those 36-hour days when he is on call? "My day usually begins at 6:15 a.m. When I come in well before 8:00 rounds, I can spend more time with patients finding out how their nights went, and get a head start on the day," Dr. Yee explains. "This helps me organize my plans for each patient that day. Rounds take up the rest of the morning."

Twelve noon. A 72-year-old man arrives on the floor on a stretcher. He is unable to stand due to severe muscular weakness.

"When did you notice that this was something more than just tiredness? In which muscles have you noticed the most severe weakness? Do you ever have chills or fever? Are your muscles ever tender to the touch? Have you eaten any pork recently? Tell me about the pain—is it a sharp pain or is it dull, like a toothache? Have you lost any weight recently? How is your appetite?" asks Dr. Yee.

"Mr. Hicks had eaten no pork recently, that makes the possibility of trichinosis less likely," says Dr. Yee. "The lab tests,the way the disease progressed, the location of the weakened muscles, and the muscle tenderness make me suspect polymyositis, a disease which inflames certain muscles causing them to be weak and tender."

Two p.m. After a thorough physical examination, Dr. Yee is ready to order more tests which would confirm his suspicion of polymyositis.

Six p.m. In between changing IVs, drawing bloods, and caring for the needs of his other ten patients, Dr. Yee finishes recording his new patient's history and treatment plan. He is ready to present the details of the case to his immediate supervisor.

The evening is growing late and Dr. Yee is beginning to feel the weight of the day. But like an electronic nudge in the ribs, Dr. Yee's beeper reminds him that there is work to be done—another patient on the way. On the nights when Dr. Yee is on call, any patient admitted to his floor will be under his care.

Seven-thirty p.m. A man complaining of chest pain arrives on the floor. At the same time, a nurse asks Dr. Yee to see a diabetic patient who seems to be more lethargic than usual. Dr. Yee quickly checks the vital signs of the man with chest pain. "I check to see if he is comfortable, that he is not in serious pain. I have to check his blood pressure, pulse, respiration rate, and listen to his heart and lungs. When I'm satisfied that he is stable for the moment, I can tend to the diabetic patient," he says. A more thorough physical will have to wait.

Dr. Yee checks in on his diabetic patient. She is indeed more lethargic. It could be that the valium he had prescribed earlier in the week has not yet worn off. But because this patient is diabetic and hypoglycemia is a possibility, Dr. Yee gives her some orange juice to correct a possible low blood sugar level, while drawing blood to confirm this.

"One of the most important things I'm learning is what needs to be done first. It's difficult in the beginning because you feel like you're being pulled in so many directions at once. You learn what should be done first and what can wait," he explains. Dr. Yee has been responsible for the care of up to 15 patients simultaneously. Knowing how to set priorities is a necessity.

This night, Dr. Yee is on call and will not sleep. He can expect to get another one or two admissions before the night is over. "I haven't seen my on-call room (a room at the Hospital where interns and medical students can sleep) since my second week of internship," sighs Dr. Yee. "I would love to get reacquainted with it."

How does he do it? "What keeps me going when I'm on call is the possibility of getting another admission. In case that happens, I have to work constantly to keep up with all my other patients," explains Dr. Yee. "There are lots of times when I'd love to leave by 7:00 p.m. to go home and sleep. There are times when I just want to do something else besides medicine. But when I get an interesting admission, I realize how fascinating medicine is."

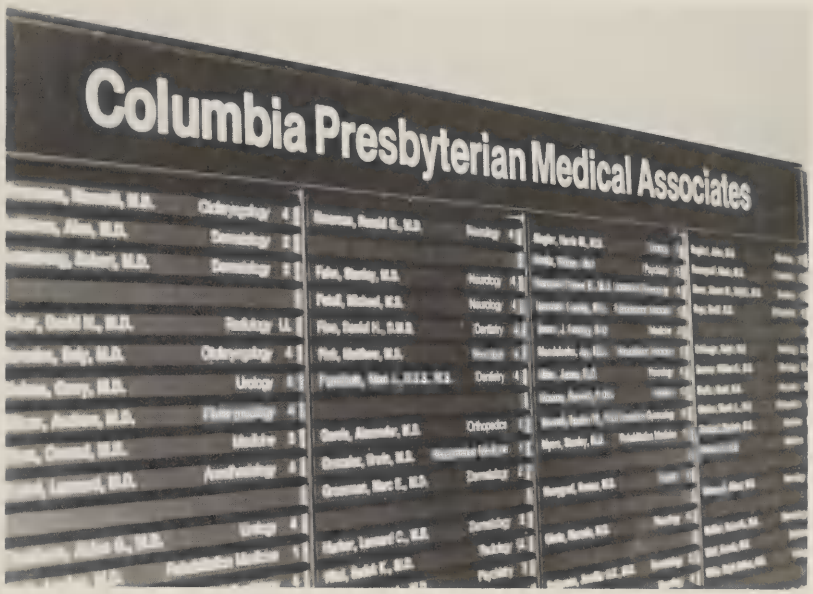
Another morning has become late afternoon and it's been one more 36-hour day. A distraught young woman approaches Dr. Yee in the corridor asking questions about her friend, one of Dr. Yee's patients. Dr. Yee spends 20 minutes talking to the woman, explaining the treatment plan and allaying her fears. Even after 36 hours, it seems as if there is nothing else he would rather be doing. ■

NEW EAST SIDE FACILITY OPERATIONAL

The Columbia-Presbyterian Medical Associates facility on East 61st Street opened on July 19 with a "topping out" ceremony attended by Dr. Felix E. Demartini, president of The Presbyterian Hospital, Dr. Robert Goldberger, provost and vice president for Health Sciences at Columbia, Mr. Edward H. Noroian, executive vice president of the Hospital, and Dr. Leonard C. Harber, chairman of the doctors' committee at CPMA.

"Columbia-Presbyterian Medical Associates/East Side has provided the Hospital and Columbia University with an opportunity to work together on a program which will be of tremendous benefit to the Medical Center," commented Mr. Noroian.

During the first month of operation, 15 physicians saw patients at the new east side facility (38 East 61st Street). It is expected that by Thanksgiving approximately 70 MDs will be in practice there. ■



SHORT CIRCUITING PAIN WITH ELECTRODE IMPLANTS

Chronic pain can result from cancer, scar tissue on nerves and nerve injuries. In most cases severe pain can be controlled by techniques ranging from nerve blocks to biofeedback. But occasionally these techniques fail to provide substantial relief. In these extreme cases patients still have good reason for optimism thanks to a treatment which involves implanting electrodes in the inner and outer thalamus.

Known as deep brain electrical stimulation, the technique "successfully relieves pain in 60 to 70 percent of chronic pain patients," says Presbyterian Hospital neurosurgeon Dr. Ronald Brisman.

"The electrodes are placed in the medial (inner) thalamus and outer thalamus," explains Dr. Brisman, who has performed nine of the rare procedures. "When you electrically stimulate the inner thalamus, endorphins (the body's own pain killers) are released. The outer thalamus, on the other hand, is the body's Grand Central Station for processing sensory messages. Electrical stimulation in this area seems to short circuit pain messages without impairing normal functions."

The electrodes are connected by wire to a small receiver implanted near the collar bone. The patient can place a transmitter connected to a power pack over the receiver to activate either the inner or outer thalamic electrodes. In both cases, a dial on the power pack permits the patient to regulate the level of stimulation.

Not long ago, Dr. Brisman implanted both electrode systems in the thalamus of 26 year old Joann Knudsen. Miss Knudsen had been suffering from debilitating pain following an operation at another hospital to remove a ruptured disk. The area of the disk had become infected, probably causing nerve injury. Miss Knudsen spent over a year in a Queens hospital. "During that period," she recalls, "on a scale of one to ten, the pain in my hips and knees was a nine. By the time I was referred to The Presbyterian Hospital in September, 1980, I had started hoping I had a terminal condition."

Joann soon had good reason to give up her fatalism. Her pain was successfully controlled for several months following a procedure during which electrodes were placed on her spinal cord. "The electrodes seem to scramble the pain messages when stimulated electrically," explains Dr. Brisman, who performed the operation.

But when Joann's pain returned, and other analgesic techniques failed to provide relief, Dr. Brisman recommended the deep brain implants.

Since then, Joann's life has changed substantially. "Together, the implants give me good relief. I'm much happier now. I can go shopping. I can play with my nieces and nephews. I used to take narcotics to the point of almost being asleep. Now I'm alert. The electrode systems don't seem to have any side effects."

The units appear to be working well. One-and-a-half years after the last implants Joann is starting to cut back on their use. "There's no reason why the implants shouldn't be effective indefinitely," comments Dr. Brisman, adding, "Joann's case is unique. Probably fewer than 1000 patients have had brain implants. Less than ten percent of these have both inner and outer thalamic stimulators. Even a smaller percentage have both stimulators as well as a spinal implant. It's an extraordinary situation representing the most modern technology for the relief of pain." ■

New York's First "Test Tube Baby"

Nine pound, one ounce David Kheel was born at Presbyterian Hospital on August 31. He was the first test tube baby born in the New York area, and the sixth in the United States. David's mother Shirley, 37, and father Robert, 39, are both lawyers and are the parents of a conventionally conceived ten-year-old son. David was born just one hour and 19 minutes ahead of the seventh product of *in vitro* fertilization, an eight pound, ten-and-a-half ounce girl born at Norfolk General Hospital in Virginia. Both babies were conceived at the Norfolk Hospital's In Vitro Fertilization Clinic.

Presbyterian Hospital's own *in-vitro* fertilization program is now accepting patients and should be in operation soon.

Robert and Shirley Kheel with son David.

Social Aspects of Sickle Cell Disease Discussed at Conference

The medical, psychological and social aspects of sickle cell disease were the subject of a day-long conference called Sickle Cell '82. The conference was held at the Medical Center on September 25 and was co-sponsored by Dr. Sergio Piomelli, director of the Division of Pediatric Hematology/Oncology and the Sickle Cell Organization for Self Help, Inc. The conference was organized by Sandra Abrams (Social Work Serivces), Dr. Evelyn Gerst, director of the Office of Continuing Education, and patients involved in the Sickle Cell Self Help Organization.

Dr. Sergio Piomelli and Ms. Mary Dean, president of the Sickle Cell Organization for Self Help, Inc., get together at the Sickle Cell '82 conference.

Prescription for Cooperation

Cooperation. For Kevin Dahill, director of Patient Relations at PH, and Jared Lebow, director of public relations for New York City's Emergency Medical Services, cooperation means everything. It means improved understanding between PH and EMS personnel and even better patient care.

What's the prescription for enhanced cooperation? "In the past," says Mr. Dahill, "attention focused on misunderstandings between the two staffs. We decided that the best way to address the situation was to open a frank dialogue." The dialogue consisted of two workshops for EMS personnel and PH nurses, house staff and attendings. Held on May 26 and June 16, the workshops "helped us all take a hard look at the constraints under which we both operate," comments Mr. Dahill. "The result was an enhanced appreciation of each other's technical expertise and judgement," he adds.

"The workshops are paying off," says Senior Unit Manager Rod Walker. "Cooperation and understanding have improved. More than ever before, the two staffs are working as a team."

Icing On The Cake

New York Islander John Tonelli cuts a lot of ice with 17-year-old Karyn Ingraham of West Islip, Long Island. He dropped by The Presbyterian Hospital recently to wish her a "Happy Birthday."

Karyn, an avid Islander fan, was recovering at the Hospital's Babies Hospital Division from open heart surgery. She was born with two large holes in the walls between the heart chambers and a defect of the veins leading from her lungs. She has been in and out of hospitals since birth. Finally, she was referred to The Presbyterian Hospital where cardiac surgeon Dr. Frederick Bowman performed a complex 6-hour operation to correct these problems.

According to Karyn's cardiologist, Dr. Christine Walsh, Karyn is doing nicely and should be able to look forward to a normal, active life.

Tonelli's visit was the "icing on the cake," a birthday present from Karyn's 15-year-old sister Lisa, who wrote to the Islanders suggesting that they might hasten the recovery of an ardent admirer.

Dr. Ryder Retires; Dr. Blumenfeld Heads Medical Affairs

Dr. Charles T. Ryder retired as executive vice president for Medical Affairs on October 1. At the same time Dr. Thomas Blumenfeld, formerly director of Medical Affairs, became vice president for Medical Affairs.

Dr. Ryder has been with The Presbyterian Hospital since 1943 when he became an intern on the Surgical Service. From 1974 to 1977 he was director of Medical Affairs and since has held the positions of vice president for Planning, executive vice president for Administration, executive vice president for Planning and Medical Affairs, and executive vice president for Medical Affairs. He has held his present position since 1979.

Dr. Ryder is the current chairman of the New York State Council on Hospital Information Policy and is a member of the State Data Protection Review Board. He is also a member of the Professional Affairs Committees of the Hospital Association of New York State and the Greater New York Hospital Association.

Dr. Ryder was honored with a lively party in the Faculty Center on September 22.

Dr. Ryder gets a warm goodby from Hospital President Dr. Felix E. Demartini.

Dr. Hugo Heads Plastic Surgery Service

Dr. Norman E. Hugo is the new director of Presbyterian Hospital's Plastic Surgery Service. Dr. Francis Symonds had been acting chief. Dr. Hugo was director of Plastic Surgery at Michael Reese Hospital in Chicago from 1969 to 1971. Since 1976 he has been an attending surgeon at Northwestern Memorial Hospital, Chicago, and an associate professor of surgery at Northwestern University Medical Center. Dr. Hugo is the author of *Biological Aspects of Reconstructive Surgery* and a co-author of such well known texts as *The Management of the Patient with Cancer;* and *Tumors of the Skin.* Dr. Hugo is a director of the American Board of Plastic Surgery and is on the Board of Directors of the Educational Foundation of the American Society of Plastic and Reconstructive Surgeons.

Dr. Norman E. Hugo

Radiologic Technology Graduation

The Pesbyterian Hospital School of Radiologic Technology held graduation exercises recently at the Pauline A. Hartford Memorial Chapel. This year's graduates were (from right to left): Kimberley Adams, Nancy Burke, Jose Casado, Linda Deane, and (not pictured) Danielle Deshommes. Congratulations!

The Presbyterian Hospital
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STETHOSCOPE

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DIAGNOSING AND TREATING EYE DISEASE
IMPROVING OUTLOOK IN RENAL CANCER TREATMENT
NANCY REAGAN VISITS FOSTER GRANDPARENTS

JANUARY 1983

STETHOSCOPE

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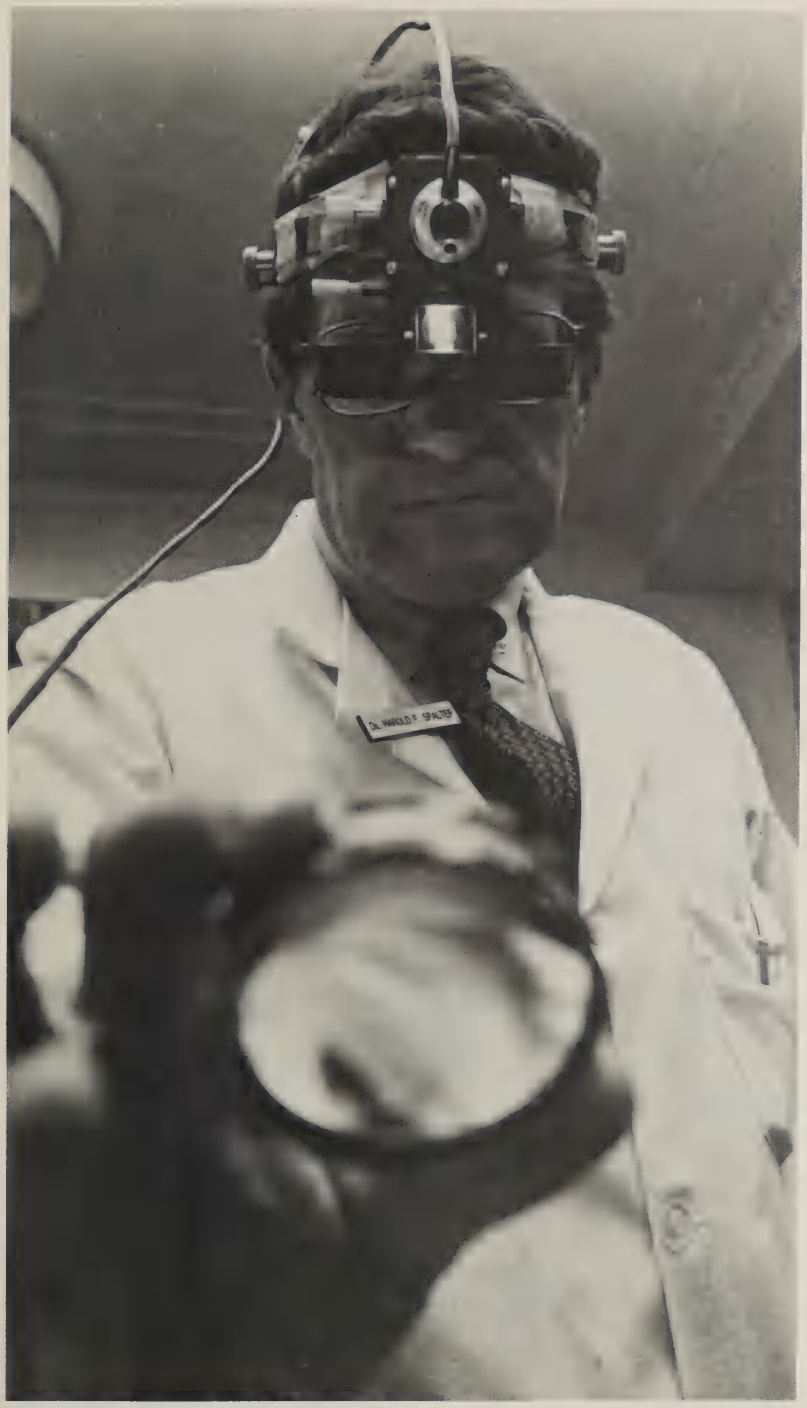
IMPORTANT NOTICE TO OUR READERS

You are invited to participate in The Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity or untrust life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information call or write the Director of Planned Giving, CPMC Fund, Inc. 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

RESTORING VISION



Dr. Spalter, wearing an indirect ophthalmoscope, prepares to give a retinal examination.

Light enters our bodies through two fluid-filled spheres which focus and translate it into electrical messages which the brain perceives as shapes, colors and motions. Over 90 percent of the information we receive comes to us through our eyes, traveling through the cornea, pupil and lens and finally reaching the retina at the center of which is the macula.

Because vision provides us with such an enormous proportion of the knowledge we have of the world, its loss, to whatever extent, is a serious threat to our quality of life and, in some cases, survival.

Visual deterioration and blindness can result from cataracts, which affect nearly four million Americans, and glaucoma, which affects nearly 1.4 million Americans. Accidents account for nearly 2 million cases each year and neovascular senile macular degeneration about 200,000 more. Other major causes of visual loss include diabetic retinopathy, congenital defects and cancer. All told, about 500,000 Americans are legally blind, while many millions have serious visual handicaps.

However, the picture is by no means bleak. At The Presbyterian Hospital's Edward S. Harkness Eye Institute, for instance, major strides have been made in the treatment of many disorders affecting the eye.

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DIAGNOSING DISEASES OF THE EYE

Every year, approximately 46,000 people go blind as a result of cataracts, glaucoma, diabetes, trauma and genetic disorders. Some of these people may now be able to save their sight because of early diagnostic techniques which can alert doctors to the problem before all vision is lost. At The Presbyterian Hospital, ophthalmologists are pioneering in the use of early diagnostic procedures to brighten the outlook for eye patients.

CHARTING THE ELECTRICAL IMPULSES OF THE EYE

Just as the electrocardiogram probes the electrical messages produced in the heart, providing the physician with crucial information about heart function, the ophthalmologist can log the language of the retina, recording the electrical signals it emits by using electroretinography (ERG).

Electroretinography uses a special contact lens fitted with an electrode to record impulses produced by the retina.

"This system allows us to see if a retinal malfunction is causing blindness or impaired vision in a patient," says attending ophthalmologist Dr. Peter Gouras. "We can determine if the problem involves the whole retina or just a portion of it. This is particularly useful in diagnosing diseases which affect the whole retinal system.

"It's very much like the ECG, but the electrical signals in the heart are continuous. The electrical signals in the retina are caused when the eye is stimulated by light," Dr. Gouras continues.

For Genero Ruberto, light no longer stimulates electrical impulses within his retina. Mr. Ruberto has a very rare form of retinitis pigmentosa, a condition which causes total blindness if left untreated. His condition is the result of an extremely rare genetic disease called hypobetalipoproteinemia, which prevents his body from absorbing fats.

"Retinitis pigmentosa is caused by the degeneration of the light-sensitive photoreceptor cells," says Dr. Gouras. "In Mr. Ruberto's case, that degeneration was due to huge deficiencies in vitamins A and E, both of which are metabolized with fats." If Mr. Ruberto is given these vitamins, the progression of his disease may be slowed and perhaps even stopped, Dr. Gouras says.

TWO EYES IN ONE

There are two types of photoreceptors, the light-sensitive cells, in the retina.

"The human eye is really two eyes in one," explains Dr. Cynthia Mackay, a Presbyterian ophthalmologist, who runs the ocular genetic retinography clinic. "There is a daytime eye and a nighttime eye." Daylight is detected by about 7½ million cones, while 120 million rods are used for night vision.

When the retina is stimulated by light, the rods or cones will produce an electrical impulse. In the brain, these impulses are transformed into the image we see. It is these electrical impulses produced by the rods and cones that Dr. Gouras records.

"The technique is particularly useful in diagnosing genetic diseases of the retina which involve all of the rods or the cones. We can tell if the visual impairment or blindness is caused by photoreceptor cells that just aren't working right," he adds.

COMPUTER DETECTS MINUTE RESPONSES

And that's what Dr. Mackay found when she examined Mr. Ruberto's eyes. The ERG showed that light was not causing a response from Mr. Ruberto's light-sensitive rods. But by using a computer to sum up and average 64 of his responses, Dr. Mackay was able to detect minute responses of cones sensitive to certain colors. The ERG showed that Mr. Ruberto had not yet lost all of his vision.

"The computer system here allows us to take a very tiny signal and study it. In almost any other lab in the world, that signal would go undetected," says Dr. Mackay.

By testing photoreceptor response in patients before and after treatment, Dr. Gouras has used the ERG to show that patients with this type of retinitis pigmentosa respond to treatment with vitamins.

LOOKING BEYOND CATARACTS

The ERG also is useful for evaluating retinal function in cataract patients and patients with hemorrhages in the eye. Cataracts or hemorrhages often make it impossible for a doctor to look into the eye and see the retina. By using ERG, the physician can determine if the retina is working without ever having to see it. "The ERG gives us an idea of the condition of the retina, and helps determine if surgery to remove a cataract, for example, is worthwhile," says Dr. Gouras.

TESTING COLOR VISION

Not only can the ERG determine if

SPECIAL TESTS USED TO DIAGNOSE E

When an ophthalmologist orders a fluorescein angiogram for a patient with a retinal hemorrhage, that patient would go to the Eye Diagnostic Center.

"We do a variety of jobs here," says manager of the department, Hugh Daly. "We perform diagnostic testing on patients referred by private doctors and the clinic. We are the only place in the Medical Center that does fluorescein angiography and fundus photography, for instance. We take the photos, develop and print them right here.

"We also have the only ocular ultrasound technician in the Hospital," says Mr. Daly. Manuel Peralta performs these tests, which help ophthalmologists detect tumors of the eye. Mr. Peralta also tests the visual fields of patients to determine their range of peripheral vision.

In addition to diagnostic testing procedures, the staff also helps physicians with various treatments involving lasers. "The argon and ruby lasers, and the xenon arc source used for photocoagulation treatments are located in this department," says Mr. Daly.

The Center is also in the video business. "We have one of the most innovative video systems available," says

the rods and cones are responding to light, the test can also be used to measure specific types of cone response. "There are three types of cones which respond to color," Dr. Gouras explains. "To test one of these, we first get rid of the rod activity by stimulating the eye with a bright light. Because the rods can only detect up to a certain level of light, we overstimulate them with this bright light. The cones, however, can detect light of great intensity, so any responses to additional light are cone responses." Using this method, Dr. Gouras is the first to have isolated the response of the blue-sensitive cone system.

"Because different cone systems detect different colors, using this system we can determine which ones are defective. Eight per cent of all males have deficiencies in their red or green cones. Two per cent lack either their red or green-sensitive cones altogether," says Dr. Gouras. A deficiency of the blue-sensitive cones is very rare.

DETECTING FLAWS IN THE VASCULATURE OF THE EYE

PH ophthalmologists are investigating another diagnostic tool to detect flaws in the vasculature of the eye. By injecting a dye called fluorescein into the body, the blood vessels in the retina can be tested for leaks. PH is one of the few hospitals in the country that uses the technique, called vitreous fluorophotometry (VFP), to detect these leakages.

Says Dr. Bette Demartini, a first year resident in ophthalmology, "VFP is sensitive enough to detect minute quantities of fluorescein in the chamber of the eye so we may now be able to diagnose a leak much earlier than we could using other methods."

FINDING LEAKS IN BLOOD VESSELS OF DIABETICS' EYES

Diabetic patients often have changes in the vasculature of the retina, which could cause blindness. These changes, which often result in leaks of the blood vessels, can be seen on fluorescein angiograms, pictures of the retina taken with X-rays. Even though fluorescein angiograms may be normal in very early diabetics, VFP tests may be able to detect leakage before it becomes noticeable on the angiogram.

"VFP may be a more sensitive test for early changes in the vasculature of diabetics than angiograms," Dr. Demartini says.

"The earlier the vascular changes in diabetic eye disease can be detected, the greater the potential to reverse the changes that are causing the leaks by using various types of therapy. VFP also may be able to help ophthalmologists identify those patients at greater risk of developing diabetic eye disease so these problems can be corrected before they can significantly affect the patients' vision.

"VFP could also be used to check if a procedure to correct a leak was successful. For instance, certain vascular tumors, like the angiomas, are treated with photocoagulation techniques. VFP may be useful in determining if the treatment was successful in sealing even the most minute leaks," explains Dr. Demartini. "Although research in this technique is still in an early stage, the potential for its use with patients is quite promising."

SCANNING THE ORBIT OF THE EYE

Doctors at PH were among the first to peer behind the eye using the CAT (computerized axial tomography) scanner. "The CAT scanner is the most accurate way to diagnose diseases which occur around the eye or those which affect the globe of the eye itself," says Dr. Sadek K. Hilal, director of neuroradiology at the Hospital.

"In the past, physicians relied on X-rays and exploratory surgery to investigate problems in the space behind the eye. With the high resolution scanners we now use, we can detect tiny tumors that, in the past, would have slipped by unnoticed."

SPOTTING LESIONS THE SIZE OF A PINHEAD

Dr. Hilal, working with ophthalmologist Dr. Stephen Trokel, developed the high resolution CAT scanners capable of detecting tumors only one cubic millimeter in size—that's about the size of a pinhead. "Now we can locate a lesion much more accurately. We can also see if the tumor has extended back into the head. The CAT scanner has eliminated the need for exploratory surgery in many patients," says Dr. Hilal.

CAT scanners also are capable of differentiating between tumor types. "By studying the shape, the location, the degree to which it has infiltrated the surrounding muscle and other characteristics, we are able to predict what type of tumor the patient has," Dr. Hilal adds.

SEASE

r. Daly. "We can go into the operat-g room and film from three or four fferent angles at once, as well as rough a microscope."

REMOTE-CONTROLLED CAMERA TAPES IN OR

One of the cameras is attached to e end of a long arm which extends ver the operating room table and is emote controlled. This system allows n operation to be filmed without con-aminating the sterile environment at the operating table. There are only three such systems on the East Coast.

Robert Masini, assistant supervisor, often takes still photography in the OR to complement the video tapes. In addition to his photographic expertise, Mr. Masini also runs the bacteriology laboratory for the Eye Institute. "Even though many of the tests done in the laboratory are routine, because I do only eye cultures, the results can be processed much more quickly," explains Mr. Masini. Mr. Masini also processes slides and photographs for physicians, as well as for the Public Interest Department.

TREATING DISEASES OF THE EYE

Eighteen-year-old Bob Ralston can read the fine print on medicine bottles now.

"When I came in for treatment, I couldn't even recognize people on the streets. An hour and a half after I left the Hospital I could read a menu!" says a beaming Florence Clemens, 74, of New York City.

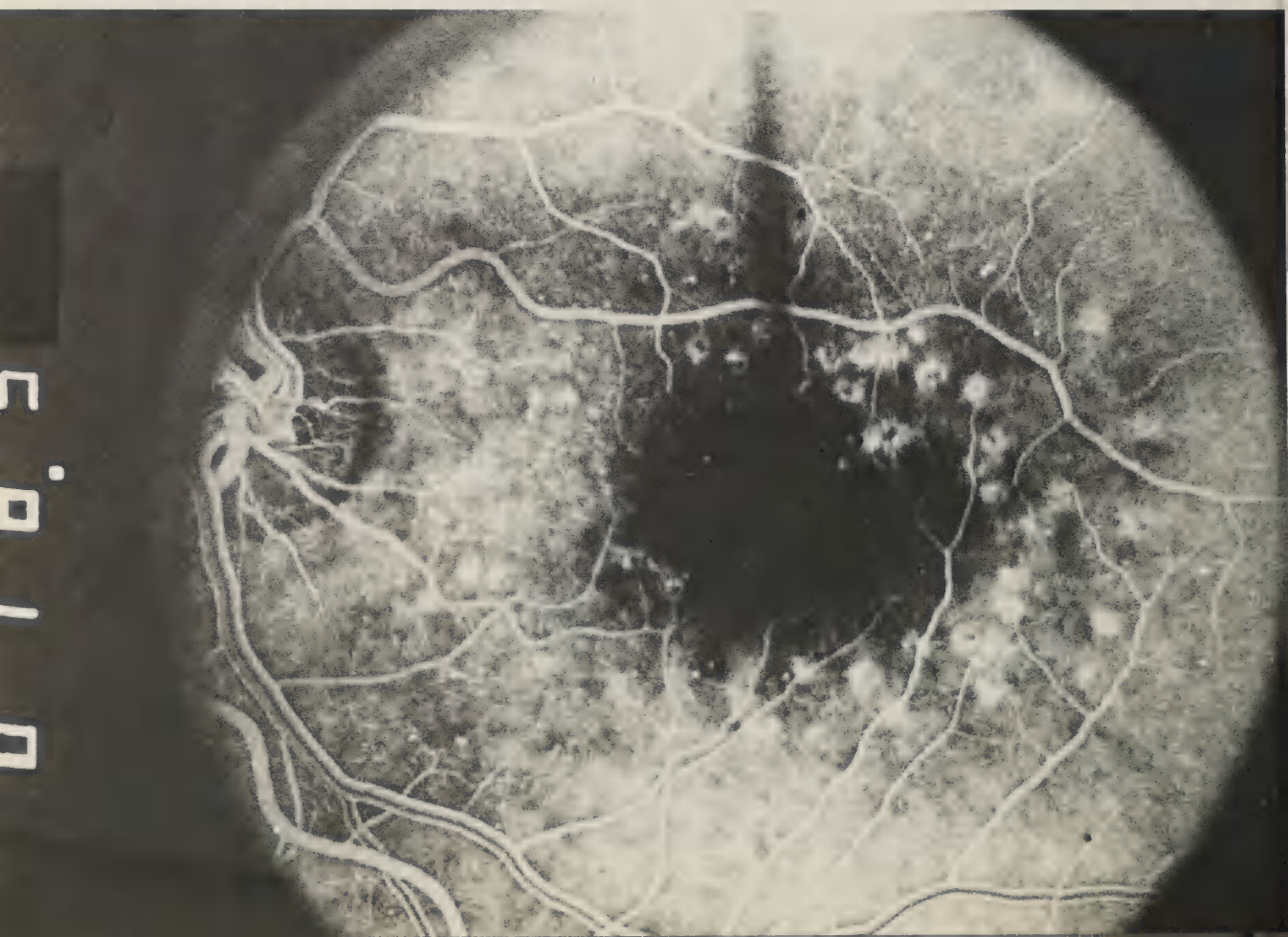
Mrs. Clemens is one of approximately half a million Americans who develop cataracts each year. Like most other cataract patients, her treatment involved implanting artificial lenses in her eyes to take the place of her own clouded lenses. "The operations gave me great results at first," she says. "But after a while my vision became cloudy again."

Vision deteriorates in roughly 20 percent of these patients because opaque membranes form behind the implanted lenses. Until recently, an operation requiring anesthesia was the only means of removing the membranes.

But patients at a small number of hospitals around the country including The Presbyterian Hospital are now benefitting from the clinical introduction of the Nd:YAG (Neodymium: Yttrium-Aluminum-Garnet) laser. Following only a few minutes of treatment with the laser, patients experience a complete return of normal vision.

A MILLION MILLIONTH OF A SECOND

"The YAG laser works like a tiny pair of scissors," says Dr. Stephen Trokel, one of the first doctors to use the new device. "It is different from any other laser used in medicine because it does not burn tissue, it cuts it. It concentrates light into pulses lasting one million millionth of a second. Because energy is concentrated in an extremely small pulse, the YAG is powerful enough to cut without burning."



Dr. Trokel, who has successfully treated over 80 of these patients with blurred vision, estimates that up to 200,000 Americans per year are afflicted with membranes which grow over their implanted lenses.

CATARACTS: A DEGENERATIVE DISEASE

Cataracts develop from degeneration of cells in the lens. But, they are not necessarily associated with the normal aging process. "Cataracts are the result of clusters of proteins within the lens. These clumps cause scattering of light and opacification," says Dr. Abraham Spector. He adds that recent evidence indicates cataracts are genetically linked.

Cataracts also can be congenital. Eighteen-year-old Bob Ralston, for instance, has had cataracts all his life. In 1980 he had both lenses replaced. But membranes later clouded his vision. In 1982 Mr. Ralston was treated with the YAG laser.

"Before surgery I couldn't see at all with my right eye and I had blind spots in my left eye. Now I can read the fine print on a bottle of aspirin," he says.

Patients with cataracts are not the only eye patients benefitting from laser treatments at The Presbyterian Hospital. Neovascular glaucoma, a condition in which vessels grow over the eye's drainage system causing increased pressure and eventual loss of sight, was once an inoperable condition. But thanks to a new procedure based on the use of a carbon dioxide laser, 18 out of 30 patients have had their vision restored over the last year and a half. The procedure takes only about 15 minutes to perform. "A thin sheath of material called the conjunctiva, which covers the eye, is pulled back. Then the laser is used to punch small drainage holes in the eyeball to release the fluids which have accumulated," explains Dr. Francis L'Esperance.

At The Presbyterian Hospital, the carbon dioxide laser is also being used to vaporize cancers of the eye. Several months ago, a malignant tumor was nearly completely vaporized by introducing a needle-like probe into the eye, and channelling the beam from a carbon dioxide laser into the cancer. Dr. L'Esperance says that "the tumor was transformed into smoke and vapor by repeated flashes of the laser beam without destroying nearby healthy retinal tissue. This new technique should allow us to cure many intra-ocular tumors that were formerly too large to consider for any type of conventional treatment."

The white spots on this patient's retina show the areas treated for diabetic maculopathy with a laser. The patient now has adequate vision.

TREATING MACULAR DISEASES

Flashes of bright light were all Mrs. Allen was aware of as she rested her chin on a slit lamp machine. On the other side of the optical instrument sat attending ophthalmologist Dr. Harold Spalter. Peering through the machine's binocular optical system, Dr. Spalter could see a dozen or more spots where tiny blood vessels had grown into Mrs. Allen's macula, the thumbtack-sized area that controls central vision in the retina.

Mrs. Allen's illness, neovascular senile macular degeneration, is the cause of blindness for 104,000 of the 500,000 legally blind Americans. The extremely rapid progression of the disease results when the membrane that connects the retina to its underlying vessels breaks down. New vessels then grow into the macula, leaking fluid onto light-sensitive nerve tissue.

"If the vessels have not grown into the central part of the macula, which is called the fovea," says Dr. Spalter, "we can preserve remaining vision by sealing the leaking vessels with an argon laser." He adds that, although most cases are caught too late to be amenable to treatment, cases which can be identified in time, for the most part, can be treated successfully.

TREATING BLINDNESS IN DIABETICS

Another major cause of blindness is diabetic maculopathy. "After 15 years of diabetes, even with the best medical care, about 70 percent of patients have some sign of this condition, and 15 percent go on to experience severe visual loss," says Dr. Spalter.

Diabetes weakens the capillaries in the eye. The capillaries eventually leak fluid into the macula, resulting in progressively blurred vision.

Until 1971 no treatment was available for these patients. At that time Dr. Spalter introduced the concept of treating each leaking blood vessel individually by sealing it with a laser. He demonstrated that this therapy was effective and the approach has since been adopted universally.

"Argon laser treatment for diabetic maculopathy is 85 percent effective in stabilizing or improving the condition," says Dr. Spalter, who has treated over 1,000 patients using the laser.

PROSTHETIC DEVICES RESTORE SIGHT

While lasers have become indispensable in the treatment of eye conditions which require extremely fine manipulation of tissues, prosthetic devices and microsurgery are restoring vision to many patients suffering from massive ocular damage.

A plastic lens made to match the patient's normal eye can not only restore normal appearance, but can also restore sight in the patient's damaged eye. Developed by Drs. Hernando Cardona and Arthur DeVoe at The Presbyterian Hospital in the early sixties, the device is called the "nut and bolt" keratoprosthesis.

This prosthesis is exactly what its name implies: a nut and a bolt. The bolt, whose head is painted to match the color of the iris, is inserted through a hole made in the cornea by the ophthalmologist. Light goes through the shaft of the bolt, which is finely ground to focus light on the retina. A nut screwed onto the bolt behind the cornea holds the prosthesis in place.

This "nut and bolt" assembly permits excellent adhesion in eyes in which a corneal transplant has failed.

For patients with the most serious eye damage, the "through and through" prosthesis, also developed and tested by Drs. Cardona and DeVoe, can restore nearly normal vision.

In the case of one 60-year-old woman suffering from ocular pemphigoid, a rare condition in which scar tissue forms beneath the conjunctiva (the membrane covering the eyeball and lid), the patient's eyelid was permanently sealed. But a "through and through" prosthesis implanted through both the eyelid and cornea gave her 20/20 vision.

"The devices yield very good results for several years," says Dr. DeVoe, who has implanted about 300 prostheses.

"With these devices patients can regain useful vision within days of surgery whereas corneal transplants take a year to heal."

While important developments have been taking place in the treatment of the most serious eye disorders, in recent years significant advances have also been made in helping patients with common visual problems such as near sightedness (myopia), far sightedness (hyperopia) and ovoid corneas (astigmatism).

First introduced in the 1920s and 1930s, contact lenses are playing a major role in correcting these conditions. The earliest contacts, however, were very different from those of today. "The early lenses caused swelling because they did not permit an exchange of fluid between the lens and the cornea, and they failed to allow oxygen to reach the cornea," explains Dr. John Espy, attending ophthalmologist at PH.

Dr. Espy, who is credited with introducing in the United States a method for molding scleral contacts to the precise shape of a patient's eye, says that today's contacts are increasingly gas permeable.

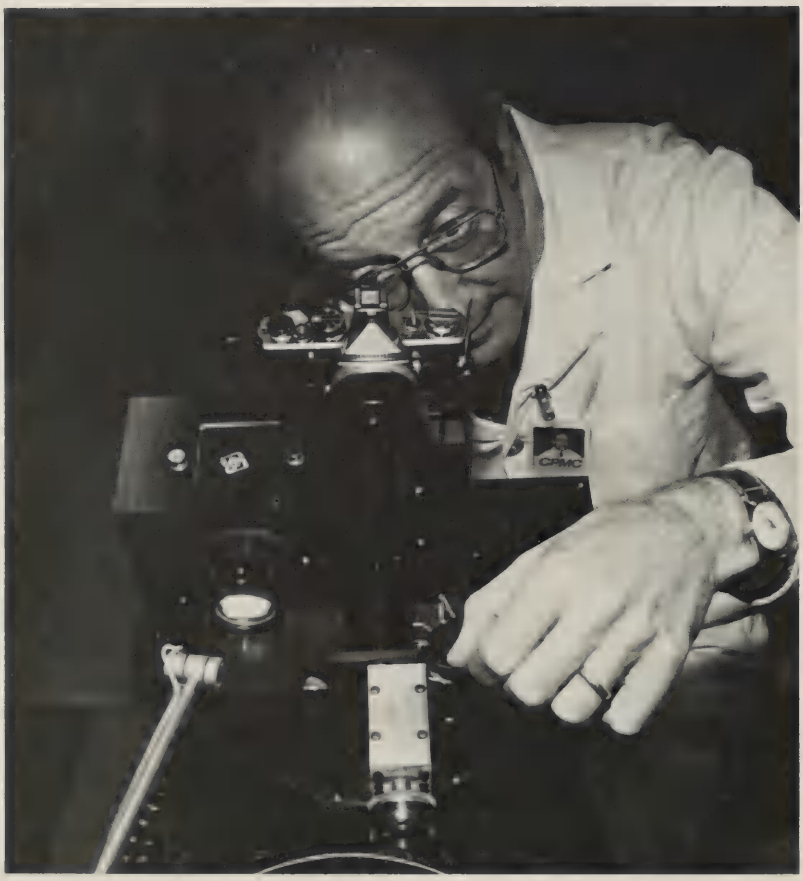
"The secret of extended-use contacts is oxygen flow to the cornea. The cornea gets 95 percent of its oxygen from the outside," he says. "We are now testing contacts made of silicone because silicone greatly improves gas permeability."

A major advance in contact lenses was the introduction of the soft lens in 1971. The new lens is more comfortable for the patient because it is more malleable. This is due to the higher water content of the lens, which varies from 30 to 80 percent, depending on the type of lens. The soft lenses also are more permeable to oxygen.

"The Presbyterian Hospital's Eye Institute played an important role in testing soft contacts, and was one of the first centers to use them," says Dr. Espy. He adds that improvements in contact lenses are constantly being evaluated here.

"We are now investigating bifocal soft contacts. Although we've used several designs, we find that we still get the best results by fitting one eye for near vision and the other for distance."

What's ahead in contacts? "Soft lenses have improved in design, optical quality and fit," says Dr. Espy. "In the future I think we'll see new materials for soft lenses, longer wear lenses and disposable lenses."



Dr. Charles Koester with the wide field specular microscope he developed. This unique microscope, which is used to magnify cells of the cornea, produces images of both a higher contrast and wider field than were ever before possible.

HELP FOR DRY EYES

Between 500,000 and one million Americans have a condition called "dry eye." The condition, which causes pain and blurred vision, can be the result of cataract or lid surgery, blocked tear ducts, the use of contact lenses, or certain drugs.

"Dry eye patients have a high probability of contracting eye infections," says Dr. Linsy Farris, a specialist in the field. Tears, he says, contain bacteria-fighting substances.

To help dry eye patients, Dr. Farris developed a diagnostic test which measures the salt content of tears. The test allows him to establish the exact difference between normal tears and those of dry eye patients. "The difference is only a five to six percent change in salt," he says. "But thanks to that information we were able to develop artificial tears, which now help thousands of patients each year."

Dr. Farris adds that tear analysis is also useful in testing for allergies and various metabolic disorders.

AN INJECTION FOR STRABISMUS

Can patients with strabismus (crossed eyes) avoid surgery? "In some cases the answer is yes," says Dr. Howard Eggers, a specialist in strabismus treatment.

Dr. Eggers is the first ophthalmologist in the Northeast to use injections of botulinum toxin to contol the condition. Botulinum toxin is produced by the bacteria which causes food poisoning. The substance, which is injected into the muscle which causes the misalignment, paralyzes the muscle for about two months. "The normal muscles then have plenty of time to pull the eye into proper position. By the time the offending muscle regains its strength, the eye is realigned," explains Dr. Eggers.

The new procedure, (only five patients have been treated so far at PH) is performed using a special hypodermic needle which doubles as an electrical detection device. "The needle, which is attached to a monitor, tells us when we've found the muscle that's causing the problem. We then inject one-millionth of a gram of botulinum toxin," says Dr. Eggers.

He adds that the treatment is best suited for mild cases of strabismus and that it can be performed several times, if necessary, to obtain the desired result.

CARING FOR EYE PATIENTS

Because we depend so much on our sight, the thought of losing that precious sense can be terrifying. And when someone regains his sight, learning to see again can be both joyous and frustrating. At The Presbyterian Hospital, specially trained ophthalmology nurses help eye patients regain use of their eyes, as well as cope with losing their sight.

"Patients who are having cataract surgery are very excited that they will be able to see again; they expect to see right after the bandages come off," explains Risa Levy, RN, an assistant head nurse. "A majority of the patients with cataracts do have improved sight after surgery, but sometimes it takes a good six weeks for the eyes to heal. We have to offer constant support to these patients and explain that seeing again will take time."

Ophthalmology nursing also involves a lot of patient teaching. "We have to teach patients how to care for their eyes after surgery," says Ms. Levy. "That includes teaching patients how to administer their eye medications, contact lens care, prosthesis care and how to bathe the eye. Many times our patients are in their sixties or older, so we have to accommodate our instructions to their needs and abilities."

Ophthalmic nurses also must deal with the emotional stress faced by patients who may lose their sight. "People often become panic stricken when they are told they might lose their sight. We have to help patients cope with this possibility," Ms. Levy says. "We talk to the patient's doctor about the prognosis, and determine how to handle it. Usually these patients are depressed and very anxious before surgery. We may call in consultants and we try to involve the family as much as possible. After surgery we may need to teach patients how to eat and dress without being able to see."

PRIMARY NURSING EASES FEARS

"We use the primary nursing method of delivering nursing care. That means that each nurse has a group of patients whom he or she follows from admission to discharge. That nurse is responsible for all the patients' needs," Ms. Levy says. "Primary nursing makes the patient feel secure; it builds a strong bond between nurse and patient. The patient knows whom to call if he has a request or question. And that sort of security is very important to patients coping with these types of stress."

Collecting a tear sample in a capillary tube.

Risa Levy, RN, adjusts a microtherm machine, which can be used to treat post-operative patients recovering from a detached retina.

THE MAN BEHIND THE MACHINERY

There is a man on the sixth floor of the Eye Institute who turns dreams into reality. His name is Heinz Rosskothen and he is the director of Instrumentation for Ophthalmology. Working alone, he creates many of the complex instruments needed by The Presbyterian Hospital ophthalmologists both for research and clinical work.

"I make things that have never existed before," says the master instrument maker. "When a clinician or scientist needs something that is unavailable commercially, they come in, explain what they want, and I make it."

Working with various PHophthalmologists, Mr. Rosskothen's 19-year career at PH has yielded: a variety of prostheses, a device to measure corneal thickness, several ophthalmic ultrasound instruments which have become the standard worldwide, a special infrared pupil camera for mass screening of patients, the alignment mechanisms for the first argon laser photocoagulator, a head stabilizing device for the early CAT scanner, a wide field specular microscope, a special cataract density camera, and a computer servo-controlled triple channel flash stimulator for studying retinal cone mechanisms.

"I work with plexiglass, aluminum, teflon, stainless steel—just about everything. I have to keep a supply of everything because I never know when I might need a little piece of something. If I need to order it, by the time I get it I won't need it anymore," Mr. Rosskothen says.

Not only does Mr. Rosskothen make anything and everything, he is also a "doctor on call" to repair machines. "Although this is not really my area, I'm sometimes called to the operating room to fix a piece of equipment. I just go in there and five minutes later it's fixed. Otherwise, a surgeon may have to wait hours for a repairman to come."

The German-born instrument maker has been in the business for almost 32 years. He began at age 14 working as an apprentice in the tool and die industry in Germany. Once he came to this country, he found he was in great demand.

"Even now, I still get offers for other jobs. But I enjoy my work here. It's very satisfying to know that the keratoprosthesis I helped design has enabled patients who were totally blind to see."

Heinz Rosskothen.

FIGHT FOR SIGHT AIDS EYE CLINIC

Over the past 30 years, the Hospital's Ophthalmology Service has benefitted from the activities of an organization called Fight for Sight, Inc. "Fight for Sight has brought attention and support to vision research worldwide," says Mildred Weisenfeld, the executive director and founder of the organization.

Fight for Sight supports research, teaching and patient care, and specifically supports the Children's Eye Clinic. Explains Ms. Weisenfeld, "Since 1950, we have distributed over $6 million among almost every leading medical college in the US and 30 in foreign countries. The Eye Institute has received more than $800,000 from Fight for Sight."

The Fight for Sight Children's Eye Clinic, established in 1961, was one of the first clinics in the US specifically devoted to pediatric ophthalmology. The Clinic was started by a grant from Fight for Sight, and is still supported by this organization. About 3,000 youngsters 13 years old and under are treated in the clinic each year for strabismus, juvenile glaucoma, congenital cataracts and retinal disorders such as retinoblastoma. Routine eye care also is available through the clinic. "The idea is to diagnose eye problems early and then try to prevent loss of vision," says Ms. Weisenfeld. Because the clinic has been so successful at PH, Fight for Sight is now supporting four other such clinics across the country.

PH ophthalmologist Dr. Charles A. Perera served as the chairman of the Fight for Sight Scientific Advisory Committee for some 28 years and is now honorary chairman. Currently on the Advisory Committee of Fight for Sight from PH are Dr. Abraham Spector and Dr. Charles Campbell, the director of Ophthalmology. "We are very grateful to Fight for Sight for their support. They have been an invaluable asset to the Eye Institute and to the entire field of ophthalmology," says Dr. Campbell.

Fight for Sight also supports student fellowships, full-time research for postdoctoral candidates and provides money for equipment.

IMPROVING OUTLOOK IN RENAL CANCER TREATMENT

Dr. Olsson with Mr. Looney.

Cancer is always a serious diagnosis. However, recent advances in the treatment of renal cancer have made the prognosis for kidney cancer patients excellent, provided the malignancy can be removed.

Each year, between 16,000 and 18,000 cases of renal cancer are reported in the US. Typically, cancerous kidneys are removed using a procedure called a nephrectomy. But in some instances, doctors are compelled to employ more complex surgical procedures: removal of a kidney along with any area into which the tumor has spread or removal of the cancer from the affected kidney to save the organ.

A few recent cases at The Presbyterian Hospital give an indication of the excellent results obtained through removal of a tumor extending beyond the kidney, or removal of part of a kidney.

Occasionally, kidney cancers spread to one of the nearby blood vessels. That was the case for Mrs. G, a 43-year-old school teacher.

"Mrs. G was admitted to PH with a tumor occupying her entire right kidney. The tumor extended up the vena cava, reaching the right atrium of her heart," recalls Dr. Carl Olsson, director of The Presbyterian Hospital's Urology Service.

Working closely with Dr. Olsson, cardiac surgeon Dr. Fred Bowman put the patient on cardiac bypass while the affected kidney was removed, tumor tissue was extracted from the vena cava, and a portion of the vena cava was removed. "Bypass is necessary in these situations," explains Dr. Olsson, "to maintain body circulation while we work on the blood vessels, and to assure that a piece of the tumor does not break away and travel to the lungs. In this case, blood flow was then re-established from the patient's remaining kidney to the vena cava. Mrs. G is now in excellent health and is working on a PhD thesis.

"In select circumstances, nephrectomy is modified to accommodate patients who otherwise would be faced with a lifetime of dialysis or dietary restrictions," says Dr. Olsson. Candidates for partial nephrectomy, says Dr. Olsson, generally have some renal insufficiency already, bilateral cancer, or cancer in a solitary kidney.

Mrs. C, a nurse from New Jersey, could not afford to lose a kidney. Troubled since her youth by chronic nephritis, a disease which results in diminished kidney function, Mrs. C faced life on dialysis after doctors discovered a malignant lesion in her left kidney.

To avoid a major reduction in her quality of life, every effort was made to preserve as much of Mrs. C's renal function as possible. "We evaluated the problem and opted to remove the tumor with only a small rim of surrounding tissue," says Dr. Olsson. "Post-operatively, Mrs. C suffered no loss of renal function and now she's back at work. Her prognosis is as good as it would have been had we removed her entire kidney," he adds.

With cancer in both kidneys, Mr. S was in even more danger than Mrs. C. But a thorough examination revealed that the upper half of one of his kidneys could be salvaged. "In this case," says Dr. Olsson, "we carried out a radical nephrectomy on the left and removed just the lower portion of the patient's right kidney."

Although Mr. S experienced a temporary decline in renal function, he was back to normal within ten days after the operation.

Ultimately, says Dr. Olsson, the patient will have no dietary restrictions at all. "A patient with good renal function," he says, "can live a normal life with as little as one third of a kidney."

Of all the possible situations involving kidney cancer, cancer occurring in the center of a solitary kidney is the most dangerous. Sixty-five-year-old Timothy Looney had just such a case. A few months ago a malignant tumor was discovered in his only kidney. To make matters worse, his tumor was growing in the center of the kidney, an area which does not lend itself to surgery unless the kidney is temporarily taken out of the body.

Mr. Looney's case, the first of its kind in the New York area, called for a bench nephrectomy, a procedure in which the kidney is removed from the patient and placed on a perfusion machine. The machine keeps the organ alive while the delicate work of separating cancerous tissues from blood vessels is completed.

"There are many advantages to this procedure," comments Dr. Olsson, who devised the technique and performed the operation. "They include improved access to the area being operated on, reduced blood loss, lessened potential for spilling of the tumor cells into the bloodstream and the ability to carry out microsurgical repair of affected blood vessels."

Mr. Looney, who now has half of one kidney, is enjoying his retirement and has normal renal function.

Adds Dr. Olsson, "A substantial majority of patients treated aggressively by partial or total nephrectomies go on to lead normal, healthy lives. The outcome in these cases is very positive."

NANCY REAGAN VISITS FOSTER GRANDPARENTS

Dr. Felix E. Demartini, President of The Presbyterian Hospital, greets First Lady Nancy Reagan when she visited the Hospital's Foster Grandparents.

First Lady Nancy Reagan visited The Presbyterian Hospital on October 27 to meet eight special women. These women are Foster Grandparents, and each of them has taken under her wing a number of the youngest patients at the Hospital, including seriously ill, abused and neglected children.

The Foster Grandparents Program, federally funded through ACTION, is sponsored here by the New York City Department for the Aging. The program places retired individuals in a variety of settings where they can comfort and assist children. The Foster Grandparents idea was first implemented in Washington, D.C. and is enthusiastically supported by Mrs. Reagan.

Foster Grandparents work in two areas at the Babies Hospital Division of The Presbyterian Hospital: The Recreational Therapy Area and the Therapeutic Nursery, for children with special parenting needs.

Although the Pediatric Recreational Therapy Area looks more like a child's dreamland than a hospital, for many young patients it has become a vital part of their treatment. A five-foot tall, bright yellow "Big Bird" watches over one room. Another room is filled with paints and Popsicle sticks. A third room is home to a giant television screen where children play video games.

Diedri Phillips, who heads the Hospital's Pediatric Recreational Therapy Program, says, "The grandparents serve as surrogate parents for our children. When the parents can't be here, the grandparents are very helpful. They provide emotional support for the children and that helps them cope with their hospitalization."

Rosa Perry has been part of the program since it began in March of 1981. "After I retired, I wanted to continue to be productive. Because of my past experience of working with children in recreational programs, the Department of Aging placed me in this program with the young patients, working in the recreational therapy area," Mrs. Perry says. "I just love working with children. It's such a joy to see a really sick child get better," she adds. The other grandparents working in the Recreational Therapy Area are: Mary Davenport, Eileen McDermott and Paquita Torres.

"The Therapeutic Nursery constitutes another form of treatment for abused and neglected children and their parents. It is a model program in the New York area, and one of the first of a small number of hospital-based child abuse treatment centers in the entire nation," says Dr. Nicholas Cunningham, director of the Division of General Pediatrics and director of the Therapeutic Nursery Program.

The Nursery staff includes a social worker, a child care specialist, a pediatric psychiatrist and the foster grandparents. The Nursery is also supported by the Babies Hospital Board of Women Managers.

Adds Wendy Kamaiko, the child care specialist and coordinator/head teacher in the Nursery, "Many programs treat just the parents or just the children. We treat them both, as well as their relationship."

Parents and children often are treated in the program's playroom, dubbed by the children "The Red Rainbow Flower Nursery." Parents and other family members also may participate in group therapy or may receive individual counseling.

"The goal of this program is preservation of the integrity of the family, rather than placement of the children in foster care,'" says Dr. Arthur Green, child psychiatrist and clinical director of the program. And the grandparents play a crucial role.

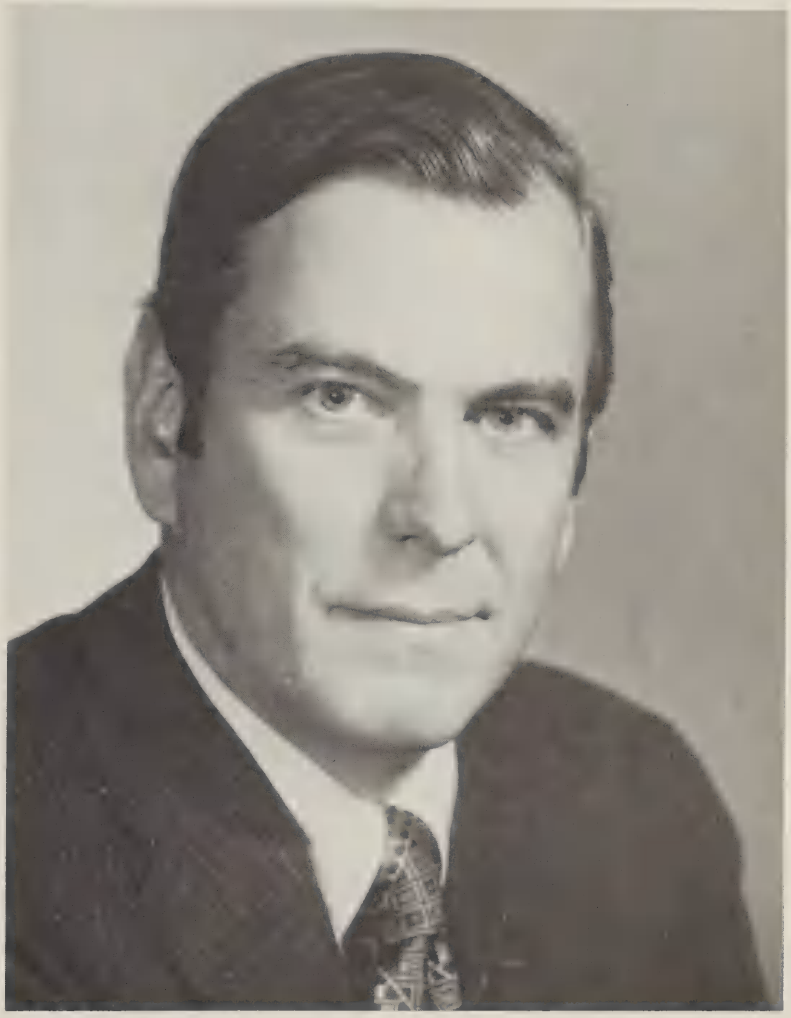
"The grandparents are an integral part of the program," says Ms. Kamaiko. "They symbolize for the parents in a very nurturing, non-threatening way what society's rules are . Often the parents come from homes that were lacking in role models. They have had so little nurturing themselves."

With the help of Foster Grandparents Arline Jerome, Mary Hoyt, Delphine Patton and Marcelina Segarra, and the Nursery staff, parents learn to become more effective and constructive.

"We couldn't have picked a more committed group of people," says Rosa Rosado, MSW, a social worker with the Nursery. "They are very supportive of the mothers, children and staff, and yet they don't get wrapped up in the mothers' problems. They have contributed a tremendous amount to this program."

NEW MEMBER ELECTED TO THE PH BOARD

The Trustees of The Presbyterian Hospital have elected a new Corporation Member to the Board of Trustees. Mr. William S. Kanaga is the Chairman of Arthur Young and Company. He also is Chairman of the Board of Directors of the American Institute of CPAs. He is on the Board of Trustees of his alma mater, Babson College, is Director of the German American Chamber of Commerce in the US, and is on the Board of Visitors of the UCLA Graduate School of Management.



Mr. William S. Kanaga

PROJECT ORBIS

Dr. Francis A. L'Esperance, Jr., a member of the executive committee of the medical advisory board of Project ORBIS, the flying eye hospital, recently journeyed with the program to the People's Republic of China to teach local ophthalmologists surgical techniques.

Project ORBIS, Inc., a free-standing, non-profit organization, is dedicated to collecting, sharing and disseminating knowledge about eye diseases, their treatment and prevention to doctors around the world. The ORBIS team flies to cities around the globe in a DC-8 aircraft specially fitted for both teaching and performing ophthalmic surgery. Dr. L'Esperance was invited to join the team on their visit to share his expertise in laser and vitreo-retinal surgery. Says Dr. L'Esperance, "It was a pleasure and ophthalmologic highlight for me."

DR. RUSSELL A. HIBBS HONORED AT LUNCHEON

Dr. Russell Aubra Hibbs, 1869-1932, was honored at a luncheon on November 11 to commemorate the 50th anniversary of his death. Dr. Hibbs was one of the outstanding surgeons of his era and his contributions to orthopedic surgery mark him as one of the foremost doctors in the specialty since it began.

Drs. David P. Roye, Jr., Melvin P. Rosenwasser and Jose R. Perez-Sanz spoke about Dr. Hibbs's life, training, affiliation to the New York Orthopaedic Hospital (now The Presbyterian Hospital's Orthopedic Surgery Service), and his contributions to orthopedics. Mr. Jack E. Termine also spoke about Dr. Hibbs's life and career.

The luncheon was attended by many alumni of the New York Orthopaedic Hospital, including Dr. Frederick L. Liebolt who was one of the last staff members appointed under Dr. Hibbs. One of Dr. Hibbs's former patients also was a guest at the luncheon.

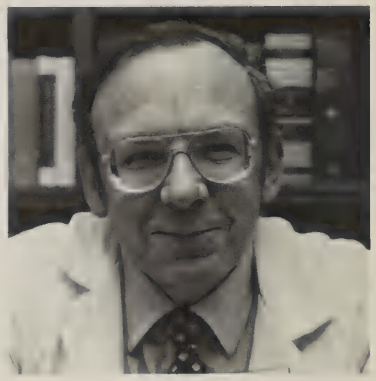
In memory of Dr. Hibbs, The Russell A. Hibbs Memorial Library, housed in PH, was established after his death to provide medical information to the orthopedic community.

DR. GLICKMAN: NEW DIRECTOR OF MEDICINE

Dr. Robert Morris Glickman has succeeded Dr. Thomas Q. Morris as the Director of the Medical Service at The Presbyterian Hospital and the Chairman of the Department of Medicine at P&S. Dr. Morris was the acting director of the service for four years.

Dr. Glickman is a Harvard Medical School graduate. After completing his residency at Boston City Hospital, he became an Assistant Professor of Medicine at Harvard Medical School. He went on to become chief of the Division of Gastroenterology at Beth Israel Hospital in Boston; and he joined the Columbia-Presbyterian Medical Center in 1977, as chief of the Division of Gastroenterology.

Dr. Glickman is a member of the American Society of Clinical Investigation and The Harvey Society. He is on the Editorial Board of the Journal of Lipid Research, the Journal of Clinical Investigation and the American Journal of Medicine. He also is on the Scientific Advisory Board of the National Foundation for Ileitis and Colitis. He co-chairs the Greater New York Chapter of Ileitis and Colitis' Scientific Advisory Committee. In addition, Dr. Glickman chairs the Training and Education Committee of the American Gastroenterological Association. He is also an editor for *Gastroenterology.*

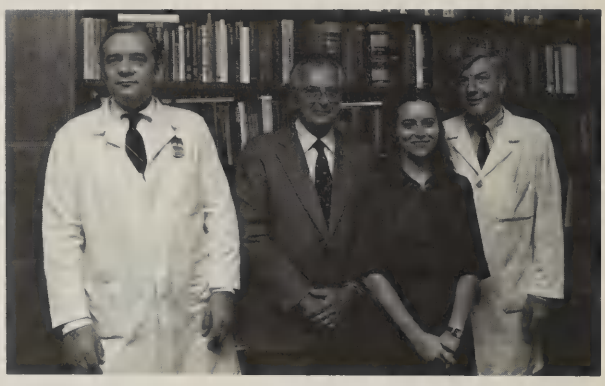


Dr. Robert Glickman

NEW FELLOWSHIP IN SURGICAL ONCOLOGY

A new fellowship in surgical oncology has been founded to support research in breast cancer. The first Phyllis Rubinstein Jacobs-Arthur Jacobs fellowship has been awarded to Dr. Alison Estabrook who is working on a number of projects relating to breast cancer including a study of the effects of monoclonal antibodies on human tumors.

Dr. Jerome Urban of the Memorial Hospital Breast Service was the invited speaker at a special ceremony to mark the receipt of the fellowship. He spoke on "Current Controversies in the Management of Early Breast Cancer." The fellowship was founded in memory of Phyllis Rubinstein Jacobs by her family.



Pictured are (from left) Dr. Sven Kister who was instrumental in securing the Rubinstein Fellowship, Dr. Jerome Urban, Dr. Alison Estabrook and Dr. Frank Gump, chief of the Breast Service.

IMMUNIZATIONS ON TARGET WITH OPERATION BABY TRACK

Each year, approximately 3,600 children are born at The Presbyterian Hospital. That's nearly 70 per week, or about nine per day. In the past, keeping track of the immunizations each one of those children needed was left to parents.

But a recently enacted New York State law requiring immunizations for all school-age children has changed that.

Working in close cooperation with the American Red Cross, The Presbyterian Hospital and several municipal hospitals now have a handle on the immunization problem: Operation Baby Track.

At PH, the program relies on five or six volunteers, one of whom visits, shortly after delivery, each patient who does not have a private obstetrician. "Baby Track is aimed at alerting mothers to the need for follow-up care to assure that their children get the immunizations that are necessary to prevent certain illnesses," says Jean Murphy Knox, RN, administrative nurse clinician, who is closely associated with the program at PH.

The illnesses children are being inoculated against are diphtheria, pertussis, tetanus, measles, mumps and rubella. In the first seven months of 1982, 117 cases of these diseases were reported among children in New York City.

"We expect that the program will reduce significantly the incidence of these dangerous diseases," says Gail Goldman, Baby Track project director at the American Red Cross.

The program was introduced here by the Hospital at the suggestion of The Presbyterian Hospital Community Health Council.

Additional volunteers for Operation Baby Track are being sought by the American Red Cross in Greater New York. No experience is necessary. Those interested in volunteering should call the Red Cross at 870-8876.

PH HOSTS NURSES FASHION SHOW

The Presbyterian Hospital's fourth annual Nurses' Fashion Show was held recently at the Faculty Center. During the show PH nurses modeled a wide array of designer clothing ranging from stunning evening wear to designer uniforms.

PH nurses participating in the event were: Pat Taeschler, Pat McGuire, Betsy Quhne, Barbara Boyd, Cathy Schwetz, Meg Halloran, Mary Lloyd, Mary-Ann Krokoviak, Joanne Buda, Dorothy O'Sullivan, Leslie Lindenbaum, Sonia Lofgren and Yvonne Sorensson.

FOOTNOTES

Dr. James H. Brassel was recently appointed Director of The Presbyterian Hospital Blood Bank. Some of the new programs he will institute are a Blood Donor Program, an Apheresis Program and Laboratory Computerization.

UROLOGY: **Dr. Ralph deVere White** has contributed to *Aspects of Male Infertility*, published by Williams and Wilkins Company. The book contains contributions by experts in male infertility from throughout the United States, Europe, the United Kingdom and South America.

MEDICINE: **Dr. Dickson D. Despommier**, associate director of the Clinical Microbiological Laboratory, recently presented a lecture entitled, "The History of Trichinellosis" to the New York Pathological Society.

SURGERY: **Dr. Norman E. Hugo** was elected 1982-83 Historian of the American Society of Plastic and Reconstructive Surgeons at the Society's Annual Scientific Meeting held in October, 1982.

PSYCHIATRY: **Dr. Stephen Levitan** was elected President of the Society for Liaison Psychiatry.

MEDICINE: **Dr. Henry Aranow Jr.**, former Acting Director of the Medical Service, was elected President of the Mary Imogene Bassett Hospital in Cooperstown, New York and Chairman of its Board of Trustees.

UROLOGY: **Dr. Terry W. Hensle** has returned from a lecture tour in Peking, Shanghai and Canton in the People's Republic of China.

SCHOOL OF NURSING: **Lucie S. Kelly**, RN, PhD, FAAN, recently returned from the People's Republic of China where she lectured at Beijeng Medical College to nurses from 15 provinces. Dr. Kelly is the first American nurse to be invited to lecture at the College.

NEUROSURGERY: **Dr. Bennett M. Stein** recently returned from a five week tour of Italy, South Africa, Brazil and Germany. Dr. Stein was invited to attend various conferences where he lectured on pineal tumors, arteriovenous malformations and intramedullary spinal cord tumors.

PSYCHIATRY: **Dr. Bruce M. Forester** recently completed his second novel entitled *In Strict Confidence*.

Dr. Bruce M. Forester, author of In Strict Confidence.

MEDICINE: **Dr. Sidney C. Werner**, visiting professor of Medicine, has returned from Japan and China where he lectured at the International Thyroid Congress in Osaka, and at the Institute of Chinese Materia Medica in Peking.

PEDIATRICS: **Drs. Terry W. Hensle** and **R. Peter Altman** recently lectured on the Common Surgical Problems in Childhood at the College of Physicians and Surgeons.

DENTISTRY: **Dr. Ronnie Myers** was appointed as the full-time Director of the General Practice (Dental) Residency Training Program.

RESTORING VISION

continued from page 1

Over the last two decades, CPMC ophthalmologists have played a leading role both in research and clinical treatment related to disorders of the eye. Major contributions include:

- The first application of a laser to the treatment of humans by Drs. Charles Campbell and Charles Koester in 1963. The two used a ruby laser to repair a detached retina.
- The development of a delivery system for the argon laser and its first application to the treatment of a human eye by Dr. Francis L'Esperance in 1968. Twenty million patients have since been treated with argon laser photocoagulation and the medical use of the argon laser has been cited by the Encyclopaedia Britannica as the greatest discovery and advance in ophthalmology in the sixties.
- The introduction to medicine of the Nd:YAG (Neodymium: Yttrium-Aluminum Garnet) laser to ophthalmology by Dr. L'Esperance in 1970. The laser produces a unique green light ideal for cauterizing blood vessels within the eye.
- The introduction to ophthalmology of the krypton laser by Dr. L'Esperance in 1971. The krypton laser is uniquely versatile because of its ability to produce wavelengths of many colors.
- The development and first clinical application of keratoprostheses (plastic lens implants) by Drs. Hernando Cardona and Arthur DeVoe in the early 1960s. The implants restore useful vision to many patients unable to accept corneal transplants.
- The first clinical tests of contact lenses. The introduction in the US of a method for molding scleral contact lenses to the precise shape of the patient's eye by Dr. John Espy in early 1960s.
- The development of the wide field specular microscope by Dr. Charles Koester in the late 1970s. The microscope provides a unique picture of corneal cells.
- The development of artificial vitreous fluid by Dr. Endre Balazs in 1970. The viscous substance now plays an indispensible role in major eye surgery, particularly certain types of high-risk surgery.
- The development of artificial tears by Dr. Linsy Farris in the late 1970s. The liquid is used by thousands of patients affected by dry eye.

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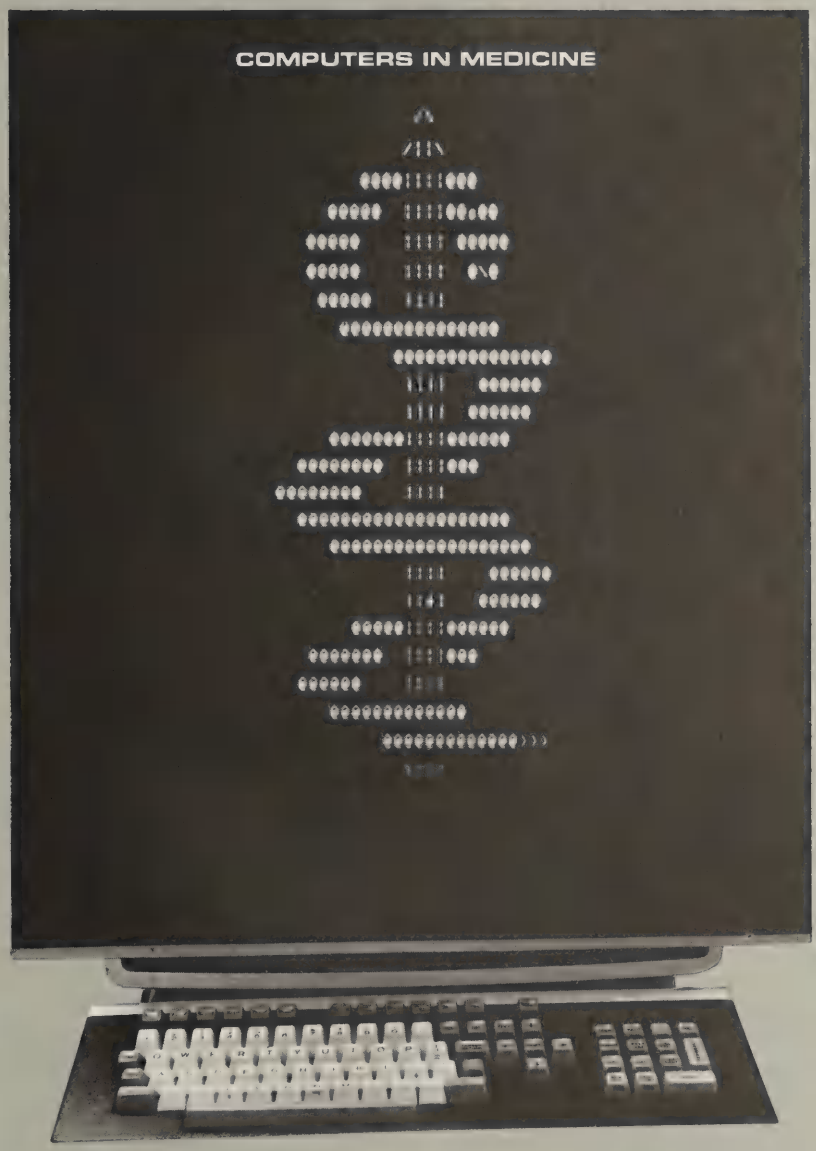

A NEW LOOK AT AN OLD MACHINE
COMPUTERS AT HOME IN THE LAB
MONITORING THE PATIENT — ELECTRONICALLY

MARCH 1983

38 N 2

STETHOSCOPE

MARCH 1983
VOLUME XXXVIII Nº 2

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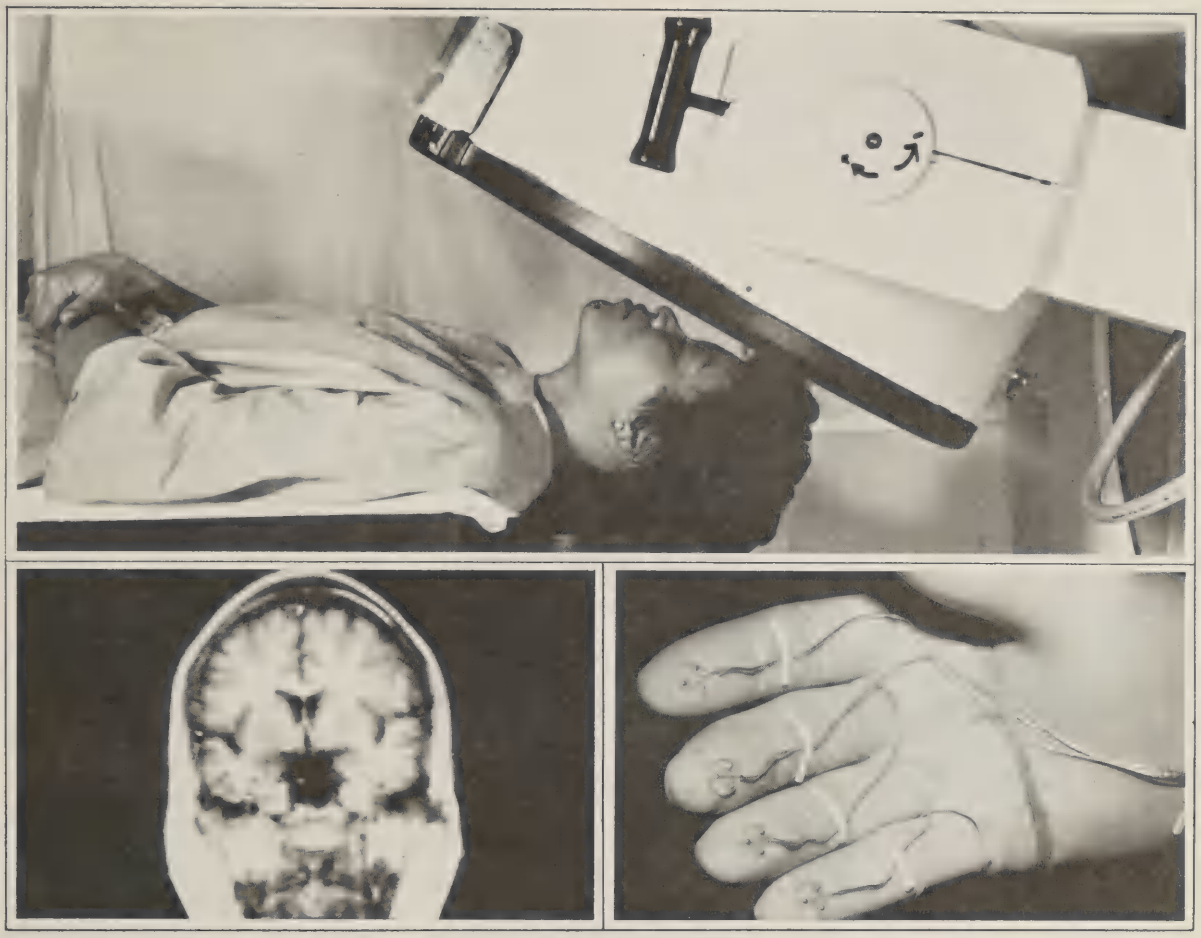
IMPORTANT NOTICE TO OUR READERS

You are invited to participate in The Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity, unitrust life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information, call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

COMPUTERS: EVER-EXPANDING TOOL OF MEDICINE



Top: SPET scanner; lower left, NMR hydrogen scan; lower right, heart mapping glove.

No matter what the job, a computer tackles it the same way. Just as easily as it suggests antibiotics, it can type letters, see brain damage caused by a stroke or measure 20 concentrations of various chemicals in a blood sample simultaneously.

Despite its many accomplishments, the computer does only two things, regardless of the job, says Dr. Daniel J. Fink, director of the Laboratory Information Service at The Presbyterian Hospital. "It stores information and processes it. What the computer does is similar to taking a million pieces and putting them into a picture."

At PH, computers work alongside doctors, nurses, administrators, researchers, technicians and office staff. But far from making medicine impersonal, these wonder machines perform many tasks that are time-consuming, yet essential, so that Hospital staff can spend more time with patients.

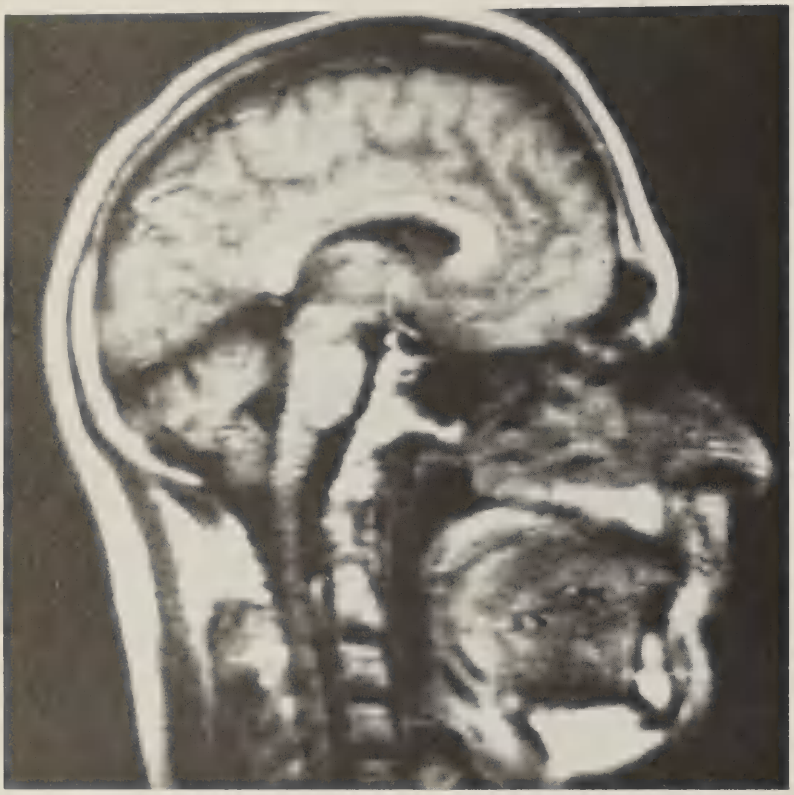
Supermachine that it is, "the computer isn't a decision maker," cautions David D. Libenson, director of Information Services. "It only helps us to make decisions. And decisions require the human touch."

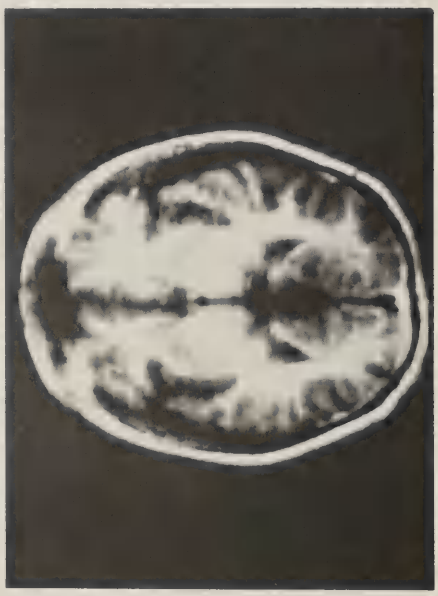
One example of how computers work hand in hand with staff is the perinatal monitoring system at PH. Here, a bedside microprocessor permits the monitoring of several patients at one time. A computer at the core of this monitor helps it predict such things as the condition of the fetus during birth and the progress of labor. Signals from each bedside are displayed at the central nursing station. If an abnormality occurs, an alert signal flashes on the monitoring screen and the staff decides how to handle the situation.

As technology evolves even further, a doctor one day may be able to get information he needs about his patients on a home computer screen. Since all of a patient's records can be put into the computer, a physician could view an X-ray right on the screen. Mr. Libenson even foresees the return of "house calls" — electronic "house calls" via the doctor's computer screen connected to a screen at the patient's home or bedside.

Computers, working with research, diagnostic and clinical care staff at PH, are an ever-expanding tool of medicine. Whether monitoring the rate of uterine contractions of a woman about to give birth, or analyzing a blood sample, computers help to fill in the gaps and turn what was once a sketch of the body into a full picture. ■

COMPUTERS AID THE MEDICAL EXPLORERS OF THE '80s





The Nuclear Magnetic Resonance scanner detects the hydrogen atoms in this man's head. Above, a lateral view. Below, the top of the head.

With the help of computers, physicians are taking a new look at an old machine: the human body. Computers allow doctors at The Presbyterian Hospital to peer harmlessly into places they never could see before, and observe processes that once were impossible to watch.

Because of the computer's ability to store and manipulate millions of pieces of information with lightning speed, physicians can watch the heart beat by using sound, find tumors by detecting specific atoms and isolate a particular blood vessel by eliminating "extraneous data." Thanks to computer-assisted techniques such as CT scanning, NMR scanning and 3-D echocardiography, exploratory surgery is necessary in increasingly fewer patients.

"The computer takes tremendous amounts of data and presents them in a way that is easy to understand, whether it's a test result or an image of an organ," says David D. Libenson, director of Information Services.

One way the computer does this is by assigning every piece of information a number. The concept is similar to rating restaurants by the "star system." It's common knowledge that a two-star restaurant serves tastier meals than a one-star eatery. The computer rates the information it receives in much the same way, so that physicians can compare one piece of information with another. For example, the physician can distinguish between minute differences in the amount of X-rays absorbed by parts of the body in a Computerized Axial Tomography, or CT, scan.

In order to do that, the computer must have a place to store all the information as it is received. Then the computer must interpret, manipulate and display the information so that it produces an image, a test result, or any of the thousands of tasks that computers perform. The nature of these manipulations depend on the computer software, that is, how it is programmed.

THE SECRET OF THE SILICON CHIP

The amount of storage and speed of a computer is dependent, in part, on a chip of silicon smaller than a postage stamp. The secret of the silicon chip lies in electrical circuits photographically etched onto its surface. In the mid '60s, only three cir-

cuits were etched onto each chip. Today's chip contains 64,000 circuits.

A greater number of circuits means that electricity going from one circuit to the next travels a shorter distance and takes less time. Even though electricity travels at the speed of light, the millisecond differences and the greater number of circuits on a more densely packed chip add up to a faster computer with ever-increasing storage and processing capacity.

As computers become more sophisticated, so do the machines they serve. For example, the computer in a CT scanner can construct an image on a screen by assigning numbers to incoming data depending on the intensity of the transmitted X-ray beam.

The CT scanner already is in its fifth generation, with each generation yielding faster and clearer images. The fifth-generation CT scanner currently is used only experimentally. Because of its speed, it is able to record a dynamic scan, like blood flowing through the heart.

A fourth-generation CT scanner can complete a scan in two seconds and create an image in half a minute. The first-generation scanners took five minutes and provided images with only one-fifth of the detail. The Presbyterian Hospital has both second- and fourth-generation CT scanners, and currently is installing a third-generation machine capable of "instant" reconstruction.

Continued on page 4

Dr. David Baker prepares the CT scanner to look inside a patient from 600 angles.

AN IMAGE ONLY A COMPUTER CAN CREATE

In a CT scanner, the computer delineates where bone ends and muscle begins.

Imagine a single X-ray passing through your body. It first encounters skin, then muscle, then bone, more muscle and finally skin before it reaches a detector on the other side. Each type of tissue — whether skin or bone — absorbs a different amount of radiation. But in the X-ray's journey, where did it meet bone, and how much did that encounter decrease the intensity of the signal?

To answer that question, the X-ray tube swings around the patient emitting radiation. Each of the 600 detectors surrounding the patient measures 1,200 signals after they've penetrated the patient. Because the detectors encircle the patient, they measure the signals from 600 different angles.

EACH PARALLEL LINE REPRESENTS AN X-RAY

Imagine drawing 1,200 parallel lines. In our imaginary scheme, each line represents an X-ray measurement. Then, on top of these lines, place another 1,200-line set, but let these lines intersect the first set at any angle. In a scan, the computer superimposes 600 of these 1,200-line sets at 600 different angles. What you end up with is a grid with 720,000 lines for each scan.

How do these numbers and angles inside the computer relate to the human body?

The computer decides which 600 lines to use to calculate the attenuating ability of each point on the grid which then determines how dark or light that "dot" should be on the image display screen. It's clear why only a computer can reconstruct a CT image, for example. ■

VIEWING ORGANS IN THREE DIMENSIONS

Computers also can provide three-dimensional views of an organ. A conventional two-dimensional image shows thin slices. The slices are parallel, like a sliced loaf of bread. But one slice shows neither the length nor the shape of the loaf.

To make these images three-dimensional, the computer gathers slices from many angles, then stores this information and assembles it into an image which can be rotated to see any point of view. It's like slicing the bread loaf lengthwise, diagonally and horizontally. The computer then reassembles all the slices to reconstruct the loaf. The more slices the computer has, the more complete the picture.

FINDING TINY TUMORS

The Nuclear Magnetic Resonance scanner can look through the patient at any angle and create a 3-D reconstruction, utilizing all the storage and processing capabilities of the present-day minicomputers.

"NMR data make CT data look like child's play," says physicist Dr. William Perman. "And NMR works without exposing the patient to ionizing radiation."

PH's advanced NMR scanner, which will be installed later this year, will be the first clinical system that is powerful enough to look for atoms of hydrogen, sodium and phosphorous. It will allow radiologists to study the shape and function of human tissue.

For instance, because malignant tumors may contain more hydrogen and phosphorous than normal cells, NMR may be able to help the physician locate cancerous tumors and monitor their growth. The computer can check the signals from an NMR scan for areas with more hydrogen atoms, which means that physicians could identify individual extremely small tumors long before these malignancies could be detected with other methods.

HOW THE COMPUTER SEES A STROKE

NMR's ability to scan for sodium may help diagnose a stroke. "Sodium is the salt of the sea," says Dr. Sadek K. Hilal, PH's director of Neuroradiology. "The way the cells distinguished themselves from the sea back when the first cells emerged was by pumping sodium out, so the cells had less sodium than their surroundings. When a cell becomes damaged, the sodium pump breaks down and sodium enters the cell. By asking the computer to look for areas with a high sodium concentration, the physician can identify strokes when they have affected just a few cells. We may be able to reverse these strokes before they do further damage."

Working with Dr. Frank Gump, chief of PH's Breast Service, Dr. Hilal is investigating the possibility of using NMR to detect breast cancer. "We hope that the NMR scanner will help us to find a lump even before it can be felt by a physician," says Dr. Gump. "The diagnostic capabilities of NMR could eliminate the need for many biopsies," he adds.

PICTURES COMPOSED OF THOUSANDS OF DOTS

The computer also can make an image clearer and more informative.

Take a close look at the photographs on this page. You will see that they are composed of thousands of dots. Compare one photo with the other, and you will see that the more dots, the clearer and more detailed the picture. Since advances in technology continuously create computers that can store and process more "dots" (or data) more quickly than their predecessors, each succeeding generation has made increasingly more detailed images of the body possible.

Suppose you want to look at a particular spot in the image. The computer theoretically can look through all the data, and find what you are looking for and display it bigger, brighter, in color, or any other way you want it.

In Digital Subtraction Angiography, the computer eliminates extraneous information by subtracting a pre-contrast image from a post-contrast image, thus allowing the physician to look only at the particular blood vessels in which he is interested. All the physician needs to do is inject a contrast material (a substance which does not permit X-rays to pass through it) into the patient, and then take an X-ray picture which is displayed on a screen.

The computer has made the technique so much more sensitive that less contrast material is used, which is safer for the patient.

THE COMPUTER DOES IT IN MILLISECONDS

"What used to take us several hours now is done in milliseconds by the computer," says Dr. Eric Martin, director of Cardiovascular Radiology.

"Because the computer is capable of making a faint vessel clear," says Dr. Martin, "we can see arteries much more easily. Before we used computers, by the time the contrast material got to an artery it had been diluted so much that the artery was difficult to see. So, we had to use

The photograph on the left is composed of 17,689 dots per square inch. The identical picture on the right contains 3,025 dots per square inch, so not as much detail is visible. The X-ray in these photographs, taken in 1896, shows a hand riddled with buckshot. Now, nearly 100 years later, images are clearer and more precise, thanks to the computer, which can handle ever-increasing amounts of information.

3-D echocardiography in use at The Presbyterian Hospital.

much higher dosages of contrast material, which can lead to complications."

Currently, PH is replacing its digital subtraction angiogram machine with a new one to be installed in the Neurological Institute.

COMPUTER USES SOUND TO SEE HEART BEAT

Physicians have harnessed the abilities of the computer to construct images in a technique called echocardiography, which creates 3-D images much like sonar: by bouncing sound waves off an organ and measuring the amount of time it takes for their echoes to return to the source, the computer creates an image of the heart. Since the software tells the computer the speed of sound waves, by timing the echoes, the computer can calculate how far the sound waves have traveled and create contours of both exterior and interior walls of the heart.

"Using this procedure, we can reconstruct the actual shape of the heart's chambers and measure the amount of blood the chambers can hold," says Dr. Donald L. King, director of Ultrasound at PH. "Because the computer makes 30 pictures of the heart every second, we can watch the way the heart wall is moving, like a motion picture. If the heart is not contracting correctly, we can detect it, and tell how it affects the volume of blood the heart pumps — in other words, the heart's pumping efficiency. Using echocardiography, we can detect this without using cardiac catheterization or contrast materials."

Dr. King says, "The patient simply removes his shirt, and, without exposing him to any radiation, the physician can measure the efficiency of his heart. There is no pain, no injection and it's risk-free."

The computer in echocardiography creates an image of a moving target. The faster the computer digests the information and performs the necessary calculations, the more "frames" it can display and the clearer the images will be.

THE EVOLUTION OF BIONIC MAN

As computers become even faster and smaller, they will be found in implantation devices to control the heartbeat, provide some vision to the blind and some hearing to the deaf, speculates Dr. Daniel J. Fink, director of the Laboratory Information Service.

Someday, a computerized pacemaker might keep the heart beating properly. Unlike today's pacemakers, which stimulate the heart at regular intervals, a computerized device would constantly monitor the heart and maintain a regular beat only when necessary. The computerized devices also would quicken the beat if the demand for blood were greater, or, correct the beat if an abnormal rhythm occurred.

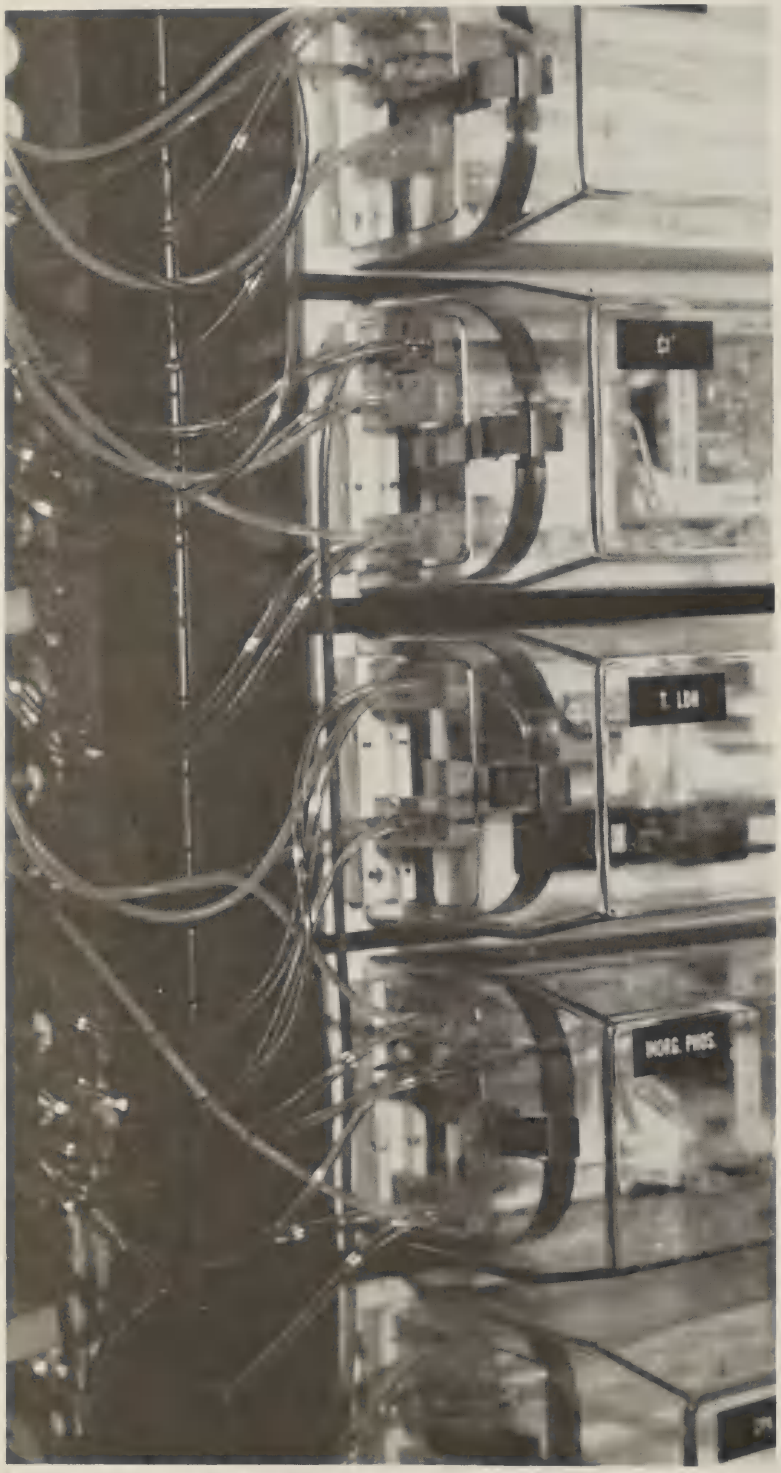
At The Presbyterian Hospital, work has begun on developing a computer that will help cardiologists and surgeons quickly find the source of potentially lethal irregular heartbeats right in the operating room, so that the source of the irregular heartbeat can be surgically removed.

WATCHING THE DNA REPLICATE

Computer-assisted imaging techniques that would show events taking place in organs on a molecular level are other medical breakthroughs envisioned by Mr. Libenson. For example, a doctor could watch DNA replication as it takes place in the cell. "The possibilities are so great that I don't think we even can conceptualize just what the computer will be able to do for us," Mr. Libenson says.

And so the computer meets the human body. While shedding light on the complexities of the body, the computer's role remains surprisingly simple. Whether enhancing a digital subtraction angiogram or sorting the signals from an NMR scan, its job is solely to store and process information, a simple concept with infinite possibilities to help save lives. ■

COMPUTERS AT HOME IN THE LAB



Tiny tubes carry the sample through a patient blood profile machine.

An automated arm reaches into a test tube, removes a drop of blood and injects it into a small tube. As air bubbles propel it along on its winding journey through plastic tubes, chemicals are added. At the end of its trip, a light penetrates the specimen and a detector analyzes the light. In less than a minute, with the light from 20 such drops analyzed, the computer can provide doctors with a complete profile of a patient's blood chemistry.

"In many of the tests we do, all of these steps are coordinated by computers," says Dr. Daniel J. Fink, director of the Laboratory Information Service. Whether it's measuring a sample, mixing precise amounts of chemicals with the sample, timing an incubation period or discarding the sample, the computers run the show. And they run it faster and with greater accuracy than was possible without them.

"Before we had computer-controlled analyzers to do patient blood profiles, we processed about 60 profiles per hour. Now we process about 100 profiles in an hour," says Dr. Fink.

While the lab benefits from the speed and accuracy of these computerized analyzers, the quick and accurate results are crucial for the doctor and patient as well. The computers have shortened the waiting time for lab test results from a day to a couple of hours.

"The value of the computer has been twofold," says attending physician Dr. Edgar Leifer. "Doctors have almost instant access to patient data when it becomes available. And the terminals also can print out the results of tests done on previous days, in chronological order, giving the physician a summary of the patient's progress."

THE COMPUTER SCRUTINIZES EACH TEST RESULT

The computer also checks the validity of the test results. "The computer checks each result by comparing it to acceptable values programmed into its memory, and if one seems unlikely, it gets flagged," says Dr. Fink.

In the end, the technician decides whether a result is correct and can be reported. In some cases, results that need to be corrected are detected by the technicians.

NEW EQUIPMENT ALLOWS FOR GREATER FLEXIBILITY

"The computers also give us much more flexibility. We can do many dif-

Karen McKenna, medical lab technician, loads a machine with samples. Inset shows the mechanical arm collecting a sample.

ferent tests with one piece of equipment," explains Dr. Fink.

With the new equipment, added flexibility has been programmed into the software. For instance, the technician can ask the computer to incubate a sample longer, or to add a chemical at a different time. Previously, some lab instruments had to be rewired to perform a different procedure, or more often, the test was adapted to the limitations of the machine.

Computers also have changed the lives of the operators. "In the past, the operator set dials and wheels, and often had to plot the test results on a graph by hand. Now the operator makes adjustments by pushing a button on a keyboard and the computer displays a graph on a screen.

"The computer has created more dialogue between the operator and the machine," adds Dr. Fink.

ERROR DETECTION SYSTEM IS BUILT IN

Unlike the earlier lab machines which buzzed or flashed when there was a problem, today's machines have extensive error detection systems, which not only tell the operator what the problem is and how to fix it, but also can take action themselves. For instance, when some machines detect that a sample size is too small, they alert the technician with a message on the screen. If the next few samples are short, the machine can shut down automatically. This helps assure that the results will be accurate.

"The computers give the operators a lot more information about the nature of the problem," says Dr. Fink. The computer keeps on top of the mechanics of each test from monitoring the temperature of an incubation bath to the intensity of a light bulb, so that the tests are performed under the proper conditions. When something goes wrong, the operator knows what it is immediately. This is yet another assurance that the test results are correct.

THE HUMAN TOUCH ENSURES ACCURACY

But the human touch remains an essential part of the testing process. To ensure that the machine is providing accurate results, the technician adds a sample with a known value regularly, and the computer compares the results to the previously stored values. "If the results are not the same, we know that the machine needs to be adjusted immediately, instead of waiting to the end of the day only to discover that all the specimens have to done again," explains Dr. Fink.

Once a computer-controlled analyzer has the test result from an analysis, the information can be sent directly to the main laboratory computer which funnels the results to 17 terminals located throughout the Hospital. Three of the lab's computerized analyzers are hooked up to this main lab computer, and their data are available to the Hospital staff in key locations, such as the Emergency Room, at the push of a button.

Computers even can help assist the physician in prescribing drug dosages. Before a physician can match an antibiotic to the offending microorganism, he must know to which medication the microorganism is sensitive, what part of the body is infected, and how sensitive that area is to the antibiotic. Because the computer specializes in storing and juggling lots of information, it plays the mix-and-match game and tells the physician how effective each of the tested drugs might be. The physician then chooses the best drug for the job.

TODAY: TESTS TOMORROW: DIAGNOSES

Dr. Fink predicts that computer analyzers may go a step further one day and produce a list of possible diagnoses for the doctor. Some scientists actively are pursuing this line of research.

In the near future, more terminals will be added throughout the Hospital to make test results easier to obtain. Eventually, terminals will be hooked into a hospital-wide system, giving the physician instant access to tests, such as X-rays or electrocardiograms, performed anywhere in the Hospital.

Dr. Fink speculates that increasing the access to patient test results will benefit many departments, as well as the physicians. For instance, a pharmacist can check how one drug is affecting a patient before he fills another prescription.

The computer's arrival in the lab makes equipment quicker, more accurate and more sensitive. But the computer never will replace lab technicians. "The technicians check test results and run the machines," says Dr. Fink, "and the computer checks us, too. We're a good team." ■

KEEPING AN EYE ON THE PATIENT . . . ELECTRONICALLY

Dr. Michael Gentilesco scans the big board for updated patient information.

The computerized big board towers over the central nursing station, much like an electronic arrivals and departures display at an airport. But this one charts only the arrivals.

At the heart of this electronic blackboard in the birthing suite at the Center for Women and Children is a computer, a concept as new as the offspring of the patients it monitors.

In the past, the medical staff placed information on a chart and then transferred it to a large blackboard which was erased each time the information changed. The computer now eases that task by gathering key facts about a patient's condition during labor and delivery and displaying them on the electronic board.

While a specially designed computer assists with patient monitoring in the birthing area, computers elsewhere in PH handle other monitoring assignments, including the recording and analyzing of patients' heart activity.

The information that all of these monitoring aids give to the staff is essentially the same type that was obtained in the past. But with the computer, the staff receives more information and they get it faster.

"The computerized electronic display in the birthing suite tries to capture the information exactly the way it was put on the blackboard," explains Henry Rey, M.S., director of the Fetal Monitoring Laboratory.

With the new electronic blackboard, the staff can monitor about 200 different medical facts for each patient, says Mr. Rey.

BIG BOARD DISPLAYS PREGNANCY SUMMARY

One section of the board contains fixed information, such as the patient's name and a brief summary of her pregnancy. Information that varies moves across the rest of the board in much the same way that the latest stock transactions move across the big board at the New York Stock Exchange.

At a glance, the medical staff can see a moving, continuously updated list of examinations, medicines, physicians' orders and remarks.

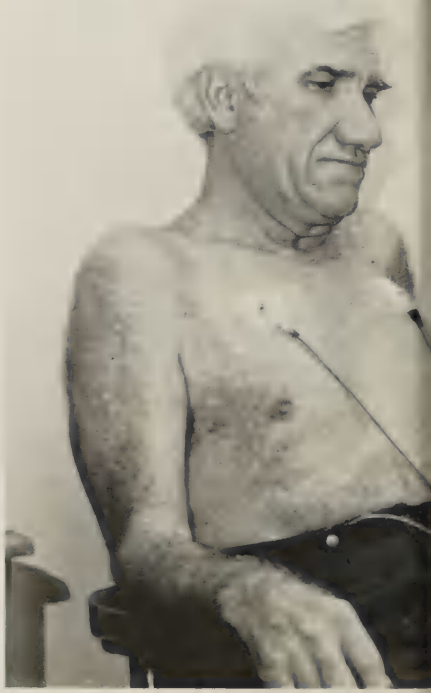
When staff relied on the blackboard for patient information, the old data were wiped from the board and gone forever. The new blackboard allows staff to keep a permanent record of this information.

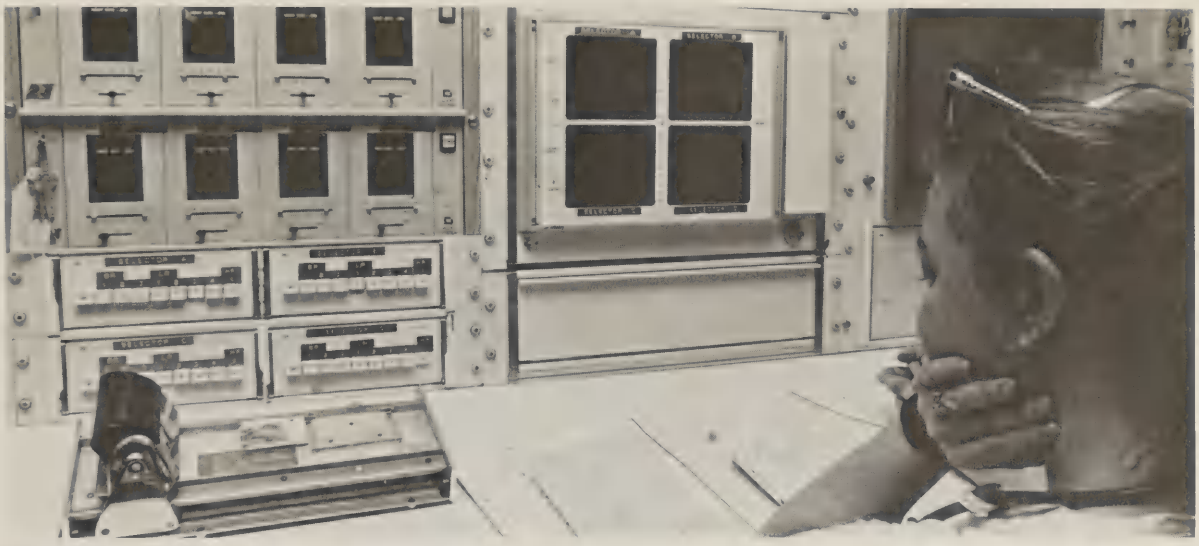
SYSTEM CONTAINS THREE COMPUTERS

Three computers are nestled into the fetal monitoring system. Monitors near the patients' bedsides record the fetal heart rate and maternal uterine pressure. This information is automatically transmitted to a central station console and if, for example, abnormal uterine activity or a drop in the fetal heart rate were to occur, microprocessors located in the console would call an appropriate visual or audio alert.

A mini-computer located just outside the labor and delivery area takes the same data, provides on demand a more sophisticated analysis and stores the results in a patient file. Data obtained from patient charts also can be entered into the computer via a number of terminals in the unit. Once these data are available to the computer, it scans a patient's file for risk factors of pregnancy and labor. The computer then can assess the current condition of the fetus as well as predict the infant's condition at birth.

Donna Banks, RN, adjusts George Orilia's telemetry





Linda Levin, RN, charts the progress of a high-risk patient.

Although the electronic blackboard only can display data for 10 patients, the "on-line" mini-computer can acquire and process information for up to 64 patients simultaneously.

A third computer handles records for labor and delivery. Data clerks enter up to 200 pieces of information for each patient from admission and medication data to their room number and length of stay. These computer-maintained records are used for departmental statistics, medical and administrative reviews and to assess the effect of new methods of treating medical complications in patients.

IRREGULARITY TRIGGERS ALERT

Computer-assisted monitoring in the Cardiac Care Unit at PH uses a data storage system that can give the activity of a patient's heart on a minute-to-minute basis and retrieve heart rate readings from a previous day.

If an irregularity occurs, or if a lead attached to a patient's chest falls off or becomes loose, the computer immediately flashes an alert. An operator reacts to it at once by picking up an emergency telephone and alerting the central nursing station.

"The telemetry instrument allows the nurses to know what's occurring on a minute-to-minute basis with each patient," says Dora Dungca, RN, associate director for the Eye, Medicine and Surgery Nursing Department.

A monitoring system in the Cardiac Intensive Care Unit observes the patient and feeds the information into the computer. One unit is programmed to pick up irregular heart beats, changes in blood pressure and heart rate, and to sound an alarm when something is amiss.

Computers also help analyze 24-hour of electrocardiograms.

PINPOINTING THE CAUSE OF CARDIAC ARREST

"An ECG records only 12 to 15 seconds of heart activity. By monitoring a patient for a full 24 hours, we can detect potentially lethal abnormalities such as heart block rhythms or ventricular arrhythmias, which can lead to cardiac arrest," says PH physician Dr. James Coromilas.

By having the computer analyze each patient's full-day tape and then tabulate the frequency of each heart beat type, doctors have an advantage, Dr. Coromilas points out. "Certain things may happen once in 24 hours which a routine ECG could miss."

The computer is programmed to recognize any abnormal signals as it analyzes the 24-hour tape. After the ECG signal is converted into information the computer can handle, the computer operator runs through the first part of the tape and teaches the computer to recognize certain signals and to reject others. Then, the computer begins to classify each electrical signal of the heart, as well as the time it occurred, its shape, area and height.

Monitoring with computers frees up the health care team to spend more time with patients, thanks to the computer's ability to painstakingly record the vital signs of patients and process this information. ■

NEATNESS COUNTS: COMPUTERS IN THE OFFICE

The computer plays an important role in a host of medical miracles. But perhaps it meets its biggest challenge in the office: modern science at last may have found a cure for the messy desk.

Stacks of memos, invoices and other papers that gobble up valuable desk and file drawer space now can be stored neatly as electronic signals in the computer. And mental notes cluttering up minds also may become a thing of the past. Employees who need to remember meeting times, conference dates and deadlines can use a computer program to serve as their personal calendar.

"These are just a few of the possibilities," says David D. Libenson, director of Information Services at The Presbyterian Hospital. "Office automation has been thought of as just a souped-up way to type and file. But it's much more than that."

Since the computer will keep a calendar of a person's meetings, lunch dates and daily schedule, it will know when people are available for conferences and can communicate with other terminals to set up meetings, automatically avoiding scheduling conflicts. It also can help queue up phone calls and messages that need to be returned, thus eliminating stacks of pink "While You Were Out" slips.

While the computer itself isn't much of a conversationalist, it can translate the sound of the human voice into signals, store the information and replay the message as easily as a telephone call recorder.

JUST CALL THE COMPUTER AND DICTATE

For example, a radiologist whose report is ready simply can call the computer and dictate. The computer turns the spoken information into electronic signals, and stores it. As soon as the radiologist hangs up the phone, an authorized consulting doctor can call the computer and hear the report. (See story this page.)

As administrative use of the computer expands, all medical records eventually will be stored in the same place.

While the Hospital is a long way from replacing paper medical records, the medical staff will be able to obtain abstracts of charts for physicians from the computers.

COMPUTER OFFERS CONVENIENT PATIENT MINI-CHARTS

"In many cases, the whole chart isn't needed," says Mr. Libenson, who likens a chart abstract to the convenience of computer-operated money centers on city street corners. "To make a cash withdrawal, you don't need a complete banking statement listing all of the checks that the bank has paid. All you need to know is the balance. A chart abstract provides similar essential information."

The Hospital's administration staff was the first to hook up to what eventually will become a hospital-wide computerized office automation system. By the end of 1983, a total of 64 computer work stations will be in operation at PH. Among the first departments to link into the system will be Medical Records and the Radiology Service.

By the early 1990s, Mr. Libenson expects that integrated computer systems will serve the entire Hospital.

NEW SYSTEM WILL ALLOW PERSONAL COMPUTING

"Not only will the systems give doctors access to a patient's charts and records from the patient's bedside, but they also will permit personal computing, such as research projects or departmental budgets. Our data base will serve both individual and corporate needs — which is unusual, since most organizations don't take personal computing into account."

The job may be matching people and meetings, typing a letter or delivering important memos. Whatever the demand, all the computer does is make the task easier for the people involved, says Mr. Libenson. "It helps us to work more efficiently and it frees up people, giving them more time to do the one thing the computer can't do; make decisions." ■

X-RAY REPORTS JUST A PHONE CALL AWAY

Until just this year, a doctor awaiting a radiologist's report often had a five-day delay before he could read it. Now, the physician has immediate access to the information. All it takes is a telephone call to a computer.

A new system to be installed at PH this spring will put the referring physician into instant touch with a dictated report from practically any location.

"If a doctor is at home, all he'll have to do is dial the number and enter his individual access code," explains Patricia Chambers, administrator, Radiology Department. "The only special equipment the physician will need is a push-button phone."

When the computer answers the call, the doctor will hear the latest X-ray report. Each report will remain on the system for about four days, during which time the referring physician will have received a copy of the report.

The telephone is the keystone of this computer-assisted system, which is the first of its kind to be installed in New York City. Radiologists and doctors who have used similar systems at other hospitals have found that calling the computer is as simple as making a long-distance call, Ms. Chambers notes. The only difference is that the area code is longer.

COMPUTER TURNS RADIOLOGIST'S VOICE INTO SIGNALS

After the radiologist receives the X-ray films, he will analyze them, call the computer and dictate the report. The computer will turn his voice into signals, store them on a magnetic disk and replay the report upon request to authorized callers.

Once stored in the computer, the reports will be transcribed by typists using word processors. Not only will the word processors accelerate the typing of the dictated reports, but they also will enable the department to develop standard texts for normal reports.

"We see this system as the first step for the rest of the Hospital," Ms. Chambers adds. "Once the system is refined, we expect that it also will be used in pathology, as well as in other areas." ■

PH ELECTS NEW BOARD CHAIRMAN

'I am honored that the Trustees have chosen me to build upon the success of Mr. Choate and Mr. Brooks, who helped restore one of the nation's great teaching hospitals to fiscal health. . . so that it can maintain its leadership position over the next 25 years', says Howard L. Clark, new PH Board Chairman.

Howard L. Clark was elected Chairman of the Board of The Presbyterian Hospital on January 19, 1983. He succeeds Thomas H. Choate and John W. Brooks, who were Chairman and Co-Chairman, respectively, since 1976.

Mr. Choate and Mr. Brooks remain on the Board as Trustees.

The 67-year-old Mr. Clark first came to PH as a Corporation Member and Trustee in April 1960. He remained on the board until 1969, and rejoined the Hospital in 1976. The following year, he was elected to the Executive Committee, and in 1979 became Nominating Committee Chairman.

As former chief executive officer and president, and then chairman of the American Express Company, Mr. Clark brings more than 40 years of experience in business and finance to his new post at the Hospital. He joined American Express in 1945, and in three years became a vice president.

In 1952, he became Senior Vice President of the company, and by 1960, was Chief Executive Officer and President. In 1968, he was named Chairman, a position he held until 1977. Until he retired in 1979, Mr. Clark was Chairman of the Executive Committee.

Mr. Clark is a native of South Pasadena, Calif. He received his B.A. from Stanford University in 1937. He attended the Columbia University Graduate School of Business from 1937 to 1938.

Mr. Clark received his C.P.A. in 1941. The following year, he graduated from Harvard Law School and was admitted to the New York Bar in 1942. He served as a lieutenant in the U.S. Navy from 1942 to 1945.

Mr. Clark also is a serious golfer, and is a member of golf clubs and associations around the world. In 1977, he was awarded the coveted Gold Tee Award by the Metropolitan Golf Writers Association for his contributions to the sport.

Mr. Clark is married to Jean Beaven Clark and is the father of four children and five stepchildren. ■

IN MEMORIAM

DR. JOSE M. FERRER JR. DIES

Dr. Jose M. Ferrer Jr., noted educator and attending surgeon at The Presbyterian Hospital, died on December 24, 1982 at the age of 70.

Dr. Ferrer was born November 25, 1912, in New York City. His father was a New York physician and his mother was active in New York civic and political affairs. He attended the Canterbury School, received his A.B. from Princeton University in 1934 and his M.D. from the College of Physicians & Surgeons in 1938.

During World War II, he served in the medical corps, where he rose to the rank of major. He directed the Penicillin Therapy Research Unit at Percy Jones General Hospital and the surgical staff of the 71st Evacuation Hospital in the Southwest Pacific Theatre. He received the Bronze Star for service in the Philippine Islands Luzon Campaign and the Legion d'Honneur et de Merite from the Republic of Haiti in 1952.

Widely respected as a distinguished general surgeon and specialist in gastrointestinal, esophageal and pediatric surgery, Dr. Ferrer was noted for the development of a number of surgical techniques and for his research on surgery of the esophagus and on the management of burns.

Dr. Ferrer had been in active practice at the Hospital until a few years ago. He recently retired from his post at the College of Physicians & Surgeons.

Dr. Ferrer is survived by his wife, Mary, their five children, and eight grandchildren.

Dr. Jose M. Ferrer Jr.

DR. SOL SPIEGELMAN DIES AT 68

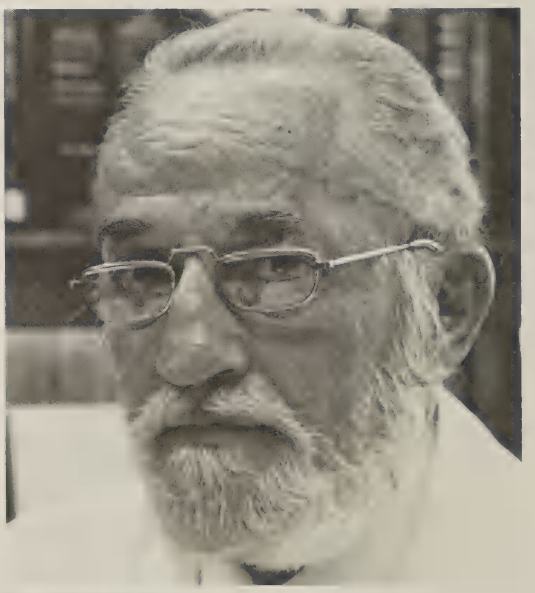
Dr. Sol Spiegelman, director of the Institute of Cancer Research and the Comprehensive Cancer Center at the Columbia-Presbyterian Medical Center, died on January 21, 1983. He was 68 years old.

Dr. Spiegelman was born in New York City on December 14, 1914. He began his research career while an undergraduate at the College of the City of New York, where he majored in mathematics and physics.

He received his Ph.D. from Washington University in St. Louis in 1944. After a year as a U.S. Public Health Service Fellow at the University of Minnesota, Dr. Spiegelman joined the faculty of the University of Illinois, where he served from 1949 to 1969. In 1969, he joined the staff of the Medical Center.

Dr. Spiegelman, an internationally acclaimed expert in genetics, virology and the molecular basis of cancer, had studied almost all functional aspects of DNA and RNA. He discovered phenomena of central importance in molecular biology and repeatedly anticipated future developments. In 1962, Dr. Spiegelman developed a technique allowing the detection of specific DNA and RNA molecules in cells. This procedure, known as nucleic acid hybridization, has made the current revolution of recombinant DNA possible.

Dr. Spiegelman is survived by his wife, Helen, a daughter, two sons, and three grandsons.



Dr. Sol Spiegelman

FOOTNOTES

MEDICINE: **Dr. DeWitt S. Goodman,** director of the Division of Metabolism and Nutrition, was an invited guest for the presentation of the Nobel Prize in Physiology and Medicine in Stockholm, Sweden. While in Sweden, Dr. Goodman delivered a lecture on "Cholesterol Turnover and Metabolism in Humans."

MEDICINE: **Dr. J. Thomas Bigger Jr.** director of the Arrhythmia Control Unit, recently presented a lecture entitled "The Significance of Ventricular Arrhythmias After Myocardial Infarction" to the American Heart Association.

A symposium on perinatal infections was presented by the Columbia University School of Nursing at the William Black Building. The symposium's planning committee included Joanne Merry, RN, Margherita M. Hawkins, RN, Dr. J. Milton Hutson and Dr. Joan Regan.

The **Thursday Lecture Series** at the Babies Hospital division of The Presbyterian Hospital will continue this spring with the following lectures: On March 10, Dr. Luke M. Kitahata, Professor and Chairman of the Anesthesiology Department at the Yale University School of Medicine, will speak on "Update on Pharmacology of Pain." Dr. Keith Reemtsma, director of the Surgery Service at PH, will lecture on "Transplantation: Current Status and Future Trends" on March 17. On April 7, "The Etiology and Prevention of Anesthetic Mishaps" will be presented by Dr. Jeffrey Cooper of Massachusetts General Hospital. The "Hemodynamic Adjustments to Mechanical Ventilation" will be presented on April 28 by Dr. Henrik H. Bendixen, director of the Anesthesiology Service at PH. Dr. M. Jack Frumin, lecturer in anesthesia at Stanford University, will lecture on "Respiration Without Ventilation—A Sextet of Paradoxes" on May 5. "Unnatural Ventilation" is the subject of a lecture to be presented on May 12 by Dr. Ralph A. Epstein, Professor and Chairman of the Department of Anesthesiology of the University of Connecticut. The lectures will be held every Thursday at 5:30 p.m. in the fourth floor auditorium of the Babies Hospital division of PH. Subjects of weekly lectures not mentioned will be announced at a later date.

ORTHOPEDIC SURGERY: **Dr. Rosamond Kane,** director of the Children's Foot Clinic, has made a film entitled "Pediatric Foot Problems," produced by the Network for Continuing Medical Education of New York City.

Dr. Rosamond Kane attends a patient during the videotaping of the NCME postgraduate telecourse, 'Pediatric Foot Problems.

RADIOLOGY: **Dr. Walter E. Berdon,** director of Pediatric Radiology, presented a course on "Radiology of the Urinary System in Newborn and Pediatric Age Groups" at the College of Physicians & Surgeons' postgraduate course in urological pathology. Dr. Berdon also presented the lecture "Iatrogenic Bone Disease in Pediatrics" at the Hospital for Joint Diseases.

UROLOGY: **Dr. Terry W. Hensle,** director of Pediatric Urology, was elected President of the American Society for Parenteral and Enteral Nutrition. ASPEN is the largest nutrition society in the country, and many of its members are from PH.

OPHTHALMOLOGY: **Dr. Francis L'Esperance** recently addressed the American Academy of Ophthalmology and presented a paper entitled "Carbon Dioxide Laser Trabeculostomy for the Treatment of Neovascular Glaucoma." Dr. L'Esperance also was a visiting professor at the University of Indiana Medical School during the first week of December.

OBSTETRICS/GYNECOLOGY: **Drs. Harold Fox** and **Roy H. Petrie** were guest faculty members at the "Semmelweis-Waters Obstetrical and Gynecological Conference" in Atlantic City, New Jersey. Dr. Fox presented lectures entitled "Role of Pelvimetry in Obstetrics" and "Vaginal Delivery Following Cesarean Section," and Dr. Petrie spoke on "Premature Rupture of Membranes and Management of Premature Labor."

PSYCHIATRY: **Dr. Ralph Wharton,** attending psychiatrist, presented a lecture entitled "The Management of Psychiatric Disorders in Doctors" at the University of Oxford in Great Britain.

The History of the Health Sciences Lecture Series, sponsored by the Health Sciences Library, continues this year with the lectures "Escape of the Genie: A Contemporary History of Drug Abuse," by Dr. Gabriel G. Nahas, and "The Ordeal of Sigmund Freud," by Dr. Sharon Romm. For further information, call 694-7931. These lectures are open to all Medical Center Staff.

DERMATOLOGY: **Jeannette E. Anders,** RN, recently was elected chairman of the steering committee for the newly formed Dermatology Nurses Association.

OPHTHALMOLOGY: **Dr. George M. Howard** recently returned from Munich, Germany, where he delivered a lecture entitled "Vascular Tumors of the Orbit" to the German Ophthalmologic Society.

STETHOSCOPE

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IMPORTANT NOTICE TO OUR READERS

You are invited to participate in The Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity, unitrust life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information, call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032 (212) 781-2100.

WOMEN AND CHILDREN: A CENTER OF ATTENTION

Mr. and Mrs. Leo Fraser get acquainted with their newborn son in the first minutes after birth.

The paths of the obstetrician/gynecologist and pediatrician cross at the birth of a child. As the child leaves the womb, he becomes a pediatric patient. At the very same moment, the obstetrician carefully attends to the mother.

Over the years, caring for the pregnant woman and her newborn has become a collaboration between the obstetrician/gynecologist and the pediatrician. For this reason, both specialties work jointly under one roof at The Presbyterian Hospital's Center for Women and Children.

The newly opened Center — the first facility in New York City devoted exclusively to the care of women and children — heralds the integration of the Hospital's Obstetrics/Gynecology and Pediatric Services.

The care available at the Center is renowned internationally: the Babies Hospital unit is noted for its advanced treatment of childhood diseases and its pioneering work with premature infants, while the Sloane Hospital for Women, also a PH unit, long has been associated with the most advanced maternal-fetal care available nationwide.

Dr. Michael Katz, director of the Pediatric Service, and Dr. Raymond L. Vande Wiele, director of the Obstetrics/Gynecology Service, agree that the geographic integration of both services under one roof has brought about improved patient care without any loss of identity for either service.

"The boundary lines between the specialties have not changed, but where there's overlap between boundaries, the cooperation is now much closer," Dr. Vande Wiele says.

The greatest advantage of the Center is the logistical change, especially the new proximity of the delivery rooms to the Neonatal Intensive Care Unit on the 12th floor, Dr. Katz points out. Here, the efforts of the obstetrician and the neonatologist are fully integrated.

"This collaboration is essential in the care of the woman and the newborn," explains Dr. Vande Wiele. "If the infant is very sick, the child immediately goes to a specialized-care nursery. We provide care for the critically ill pregnant woman who is a high-risk obstetrical patient through our Regional Perinatal Network. This way, the woman receives the finest care both before and after the infant is born."

continued on next page

Tiny visitors get a warm welcome (top photo) from nurses Meg Halloran, at left, and Jeanne Figueira, right, during a midday meeting. Joana Burgos (lower photo) joins her daughter during a play session.

The caring that accompanies the patient care is less tangible, yet, it too, helps make the Center special. "Caring is the essence of nursing," says Kiyoko Loizzo, administrative nurse clinician for the Neonatal Intensive Care Unit. "A nurse can be a superb technician in an ICU setting, but if she doesn't talk to the babies and interact with them, the human element will be lost and it will take away from nurturing the baby. But first, there must be faith in the ability of the infant to survive."

A walk through the Center's 12 floors shows how crucial the staff's caring is to the patients. Surrounded by the finest medical instrumentation and diagnostic machinery, the patients soon find that they've gained an extended family in the nursing team during their stay.

FAMILY INVOLVEMENT IS ENCOURAGED

Parents play an important role in care at the Center, whether it's by sleeping in to comfort the child in the middle of the night, by being together at the birth of their first child, or by learning how to change their child's catheter incision dressing. It's especially important for parents to get involved because, often, they must continue to give care at home.

Jeanette Velazquez, LPN, checks Rosa Perdomo's blood pressure during routine ante-partum care.

as well as to bring the children back for follow-up visits.

A visitor at the Center is likely to see a parent like Joana Burgos, who is "staying over" while her daughter recovers from surgery. Mrs. Burgos welcomes the opportunity to bunk in alongside her daughter: "I don't worry as much as I would if I were at home. Also, I can tell the nurses how she is doing when they come by to check."

It's not unusual to see a 4-year-old tot sitting on the lap of a nursing care clinician in the midst of a midday staff meeting. On another floor, a nurse "adopts" a youngster whose mother cannot visit often. Meantime, on one of the obstetrical floors, a nurse who worked at a new mother's side while the woman gave birth stops by to visit and chat about the labor and delivery process.

THE PARENTS' ROLE IN CONTINUING CARE

"As much as possible, we want the parents to learn, before they leave the Hospital, what continuing care their children will require. In addition, we want to help the families maintain their lifestyle," says Martha Haber, vice president for Nursing.

The Center's 12th floor is for mothers about to give birth and newborns. Brand new labor and delivery rooms and birthing suites provide the comfort of home as well as the most advanced life-support equipment. This area is just steps from special nurseries for infants in distress, and the Neonatal Intensive Care Unit. (See story, page 7.)

A LOOK AROUND THE CENTER

After visiting the top floor, a visitor finds four pediatrics floors directly below. Brightly painted walls and bold horizontal and vertical graphics enliven the informal atmosphere on each floor. Pediatric neurology and medical patient rooms are located on the 11th floor, where the patient age mix ranges from birth to 19. The 10th floor combines a pediatric orthopedic and medicine unit, and also houses a recreational therapy play area and public school rooms. Pediatric surgery, complete with its own Surgical Intensive Care Unit, is housed on the ninth floor. Pediatric cardiology and medical patient care units are located on eight.

The Center's fifth, sixth and seventh floors are family-centered patient care units with nurseries for newborns on six and seven. New mothers can spend as much time as they like with their new arrivals on six and seven, both floors for mothers with normal deliveries. The fifth floor is set aside for gynecological surgery patients and mothers with pregnancy complications.

MAYOR PRAISES INNOVATIVE PROGRAM

A Therapeutic Nursery and Family Center on the sixth floor addresses the problem of child abuse and neglect. The Center's crisis intervention program for preschool children and their troubled families was praised by Mayor Edward Koch. Outpatient facilities for pediatric psychiatry also are located here.

The fifth floor features a "day hospital" for children with cancer and blood disorders such as leukemia, sickle cell anemia and thalassemia (also known as Cooley's anemia).

Laboratories occupy much of the fourth floor, and part of the third floor, which also houses the pediatric X-ray area. A Medical Intensive Care Unit for children is located on the second floor. Just as in the ICU on the 12th floor, a bulletin board full of snapshots from "alumni" hangs outside the door. Admissions, doctors' and administrative offices are located on the first and second floors.

Outpatient facilities on the first two floors include special programs for pediatric allergies and asthma, genetics, cystic fibrosis and other disorders of childhood.

WHAT THE FUTURE HOLDS FOR THE CENTER

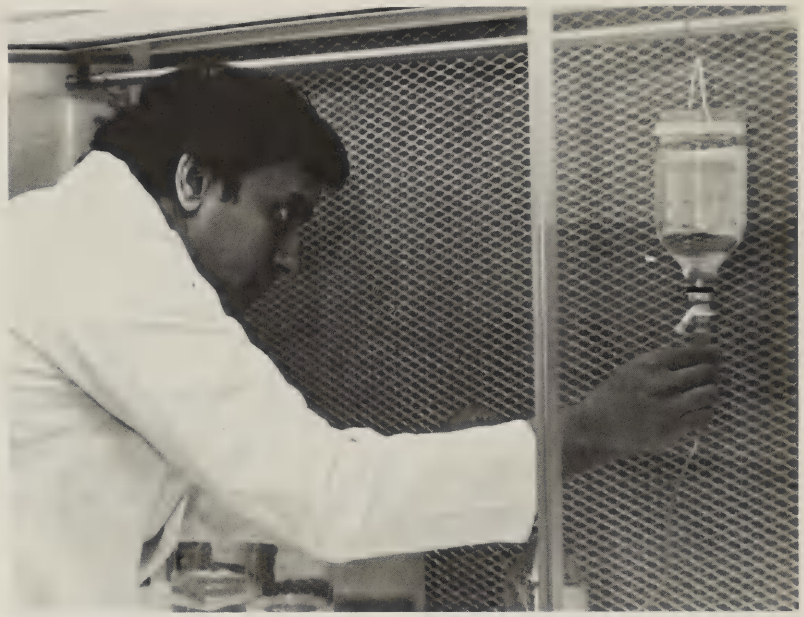
In addition to the state-of-the-art service and care now available, the Hospital's master plan for the future envisions an addition to the Center. PH director of Planning David Ginsberg says that one floor will bring diagnostic imaging for children into a single area. This will include a CT scanner, ultrasound imaging rooms, nuclear medicine and consultation rooms, plus space for research, education and record-keeping. One floor will feature a new suite of pediatric operating and recovery rooms, and another may be set aside for a day care center for staff members' children. The remaining floor will serve as a supplementary admissions and administrative area. ■

NEW ADVANCES REDUCE THE THREAT OF CHILDHOOD

From the moment a newborn infant takes his first gulp of air and peers into his mother's eyes, his pediatrician's vigil begins. The pediatrician must be on the lookout for the slightest sign that may point to congenital problems or disease. In some cases, an early diagnosis can mean the difference between life and death.

But some diseases or problems appear in the guise of less serious complications, making diagnosis difficult. On top of this, the patient often is too young to explain to the physician how he feels.

At The Presbyterian Hospital's Babies Hospital division, pediatric cardiologists, pulmonary specialists, surgeons, gastroenterologists and other specialists work together to diagnose quickly and then treat conditions ranging from chronic diarrhea to biliary atresia.



Satish Daftary, assistant pharmacist, Nutrition Support Services, mixes hyperalimentation solutions.

PARENTERAL NUTRITION: LIFE-SAVING NOURISHMENT

Pediatricians gauge the health of growing infants by measuring their weight. Once out of the womb, a healthy child with normal eating patterns tends to gain a little more than an ounce per day for the first three months.

In order for the child to develop normally, he must eat well and gain weight adequately during the first months of life. Some children who are born with defects in their intestines, or develop intestinal problems, cannot be fed by mouth. Not only do these children need nutrients to keep them alive, but they need the proper mix to grow at a normal rate.

DELIVERING NUTRIENTS TO CHILDREN WHO CANNOT EAT

"Until the early 70s, if a child couldn't eat, it often was fatal," says Dr. William Heird, associate attending pediatrician at PH. "We now have an idea of what nutrients the child needs to stay healthy and continue growing, and we have found a way to deliver nutrients to him," he explains.

In the past, pediatricians whose young patients had to be fed intravenously found that only small concentrations of nutrients could be pumped through an IV tube into a vein in the arm. "These children need glucose as well as other nutrients which can be administered in one of two ways: either as a weak solution in large quantities or as a highly concentrated solution in smaller quantities. But the huge volume that is required with a weaker solution causes fluid overload which can lead to kidney problems. However, a strong solution damages veins, which makes it necessary to restart the IVs frequently, sometimes more than twice a day. Pretty soon, no more IV sites can be found. In general, it is impossible to do this regimen for more than 10 days.

"Before we found a new way to administer required nutrients, the mortality of children who had to be nourished intravenously was about 75 percent. Now it is less than 10 percent," says Dr. Heird.

THE SOLUTION IS IN THE VEIN

Instead of pumping the nutrient solution through a small vein into the arm or leg, pediatricians now use one of the major veins draining into the heart — such as the superior vena cava — to feed the child. After surgeons insert a special catheter into this vein, the concentrated solution of amino acids, glucose, electrolytes, minerals and vitamins is pumped in at a constant rate, 24 hours a day.

"Because this vein carries so much more blood than the smaller ones, the solution dilutes immediately and the vein is not damaged," he says. "Once the catheter is in, we don't have to change it very often."

This type of feeding is called Parenteral Nutrition (PN). Dr. Heird has directed the PN program here since 1971. He also has investigated the nutritional requirements for children with these problems.

NUTRIENTS PUMPED DIRECTLY INTO THE BLOOD

"It sounds simple. When you eat steak and potatoes with butter, the gastrointestinal tract breaks the food down into amino acids, fats, glucose and other components. They are absorbed into the blood, and then go to the liver, where the mixture is modified. After that, they travel to their destinations in the rest of the body. With parenteral nutrition, we bypass the modifying effects of the liver and intestines. A large portion of our research to perfect this technique has been directed toward figuring out what the liver and intestines do to food. If we are successful, it should be

possible to perfect a mixture of nutrients for administration directly into the blood," he explains.

"Most of the problems we encountered came from the mix of amino acids, the building blocks of protein, that were available. Thus, a major part of our research has been to correct the amino acid mixture. It turned out that the correct mix was not what we expected it to be," says Dr. Heird.

For most children, PN is used temporarily to keep the child healthy until he can eat again — usually for less than a month. For some children, however, weaning the child from PN is a slow process which can take years. The intestine has to adapt to digesting food. The child starts eating only certain foods in small portions. PN can continue to provide most of the child's nourishment while his intestines learn to digest food he is eating.

BILIARY ATRESIA: A RACE AGAINST TIME

Nineteen-month-old Ann Louise Howell is alive today, but just a few years ago, the liver condition from which she suffered inevitably was fatal. Ann Louise was born with biliary atresia, a condition which results in blocked bile ducts. Bile, a chemical used in digestion, normally travels from the liver, where it is made, to the intestine. When the ducts are blocked, the bile builds up in the liver, causing liver damage.

Dr. R. Peter Altman, director of Pediatric Surgery here, was one of the first doctors in the country to perform the Kasai procedure, which was developed by a Japanese surgeon to correct the problem. In the procedure, the obstructed ducts are removed and replaced by a duct created from a piece of the child's small intestine. This new duct then carries bile from the liver to the small intestine.

"The disease is very difficult to diagnose," says Dr. Altman, "because it appears that the baby is just suffering from jaundice. Jaundice is common in infants, whereas biliary atresia occurs in one out of 20,000 births. If the child has biliary atresia and it is not corrected in the first 12 weeks of life, the baby's chance for surgical success is reduced considerably."

If the operation is done within the first three months of life, there is an 80

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Jerry and Barbara Howell with their daughter Ann Louise.

A SAVED LIFE LEADS TO BILIARY ATRESIA FOUNDATION

When Barbara and Jerry Howell brought their jaundiced 5-day-old daughter Ann Louise to The Presbyterian Hospital for tests, they weren't aware that they were racing against time.

The diagnosis indicated biliary atresia, a liver condition which can be corrected surgically, but only if it is detected within 12 weeks of birth.

The Rockland County couple's immediate action resulted in surgery for Ann Louise just four weeks after she was born and a healthy prognosis now that she is 19 months old.

"I just look at Ann Louise and say there are so many questions that no one can answer," Mrs. Howell says.

Ann Louise swayed to and fro with the music from her favorite Sesame Street tape while Mrs. Howell, a former nurse, explained why she and her husband have created a National Biliary Atresia Foundation.

AN EDUCATIONAL AND EMOTIONAL SUPPORT NETWORK

The newly established foundation is designed to help parents whose infants have biliary atresia by offering emotional support, information and access to other parents whose children have this disease. "Doctors can't release the names of patients who've gone through this, so we're trying to create our own support network," she says. "I know how it feels to be a parent of a baby with this disease and not have anyone to talk to. It's scary."

Fund-raising efforts for liver research and the development of educational materials to increase awareness about biliary atresia will be major concerns of the foundation, says Mrs. Howell.

"We know how lucky we are. Some of these babies don't develop normally, that is, physically, emotionally and mentally — they don't stand, sit or walk the way they should. Ann Louise does."

As Mrs. Howell picks up her daughter and gives her a hug, she sighs, "Ann Louise is an imp — a friendly, easy-going, smiling imp." She sets her daughter back down in the crib and tells her: "That rainbow is out there and we're going to find it, aren't we, Anna." ■

percent chance that the new duct will function properly.

"But bile drainage does not mean a cure," says Dr. Altman. "Depending on how quickly we correct the problem, some liver damage already may have occurred. Sometimes even after the bile starts draining properly, the liver damage continues. No one knows what causes the problem in the first place, but we believe that this liver disease may be caused by a virus. If the liver is too severely damaged, these children must have liver transplants to survive," he says.

Dr. Altman has carried out about 100 of these operations since 1973. Each year, about 10 patients come to PH from various parts of the country to have this rare procedure performed.

CARDIAC CONDITIONS: A HOST OF TREATMENTS

Dr. Welton Gersony, director of the Division of Pediatric Cardiology, says "Some children have a rhythm disturbance, which is one of the kinds of heart problems we see in children. There are children who have heart defects such as rheumatic fever, while others are born with something structurally wrong with their hearts. PH is a center for care of infants and children with all of these disorders," Dr. Gersony says.

"Virtually anyone can have abnormal beats every so often with no ill effects," says Dr. Gersony. "But if certain kinds of abnormal beats last long enough the condition could be life-threatening. In the last few years, we've made great progress in diagnosing and controlling abnormal heartbeats."

PORTABLE ECG PINPOINTS ABNORMAL HEART RHYTHMS

At PH, children suspected of having rhythm disturbances are monitored with a portable electrocardiogram (ECG) for 24-hour periods, after the routine 15-second ECG. Using this technique, if the abnormal rhythm only occurs once or twice in a 24-hour period, it still will be recorded.

Another method used to evaluate a rhythm disturbance is the stress test. By having the child exercise in a controlled environment, he will increase his heart rate and perhaps the abnormal rhythm may appear.

A third way to diagnose fully a complicated rhythm disorder is by placing a wire inside the heart by means of catheterization, and measuring the electrical activity of the heart.

Some abnormal rhythms require no treatment. "Some patients or their parents can be taught to carry out maneuvers to disrupt an abnormal heart beat pattern once it begins," says Dr. Gersony. "For instance, in some cases if the patient tries to gag, he can stop his own arrhythmia. In other instances, an ice bag over the face will be effective."

MEDICATIONS HELP KEEP THE HEART BEATING PROPERLY

Other patients need drugs to control their arrhythmias. Using sophisticated laboratory tests, the physician monitors the level of the medication in the bloodstream. Thus, the child receives just enough medication to keep the heart beating properly.

Surgery is almost never necessary to treat a child with a rhythm disorder, but for children with defects within the heart, surgery is the only way to correct the problem.

"We are performing open heart surgery on infants more often and with greater success than ever before," says attending cardiac surgeon Dr. Frederick O. Bowman. "Ten years ago, many of these babies would have died."

Dr. Bowman attributes the improved success rate with these tiny patients to a combination of more advanced diagnostic techniques, better pre- and post-operative care and improved operating techniques.

PULMONARY DISORDERS: A FRESH APPROACH

The Hospital also is a referral center for complex pulmonary problems. Dr. Robert B. Mellins, director of the Pediatric Pulmonary Division says, "At PH we look at the effect other diseases can have on the lungs and the way the lungs can affect other diseases. We treat children with congenital lung defects and cystic fibrosis, and infants who have had disturbances in their breathing patterns early in life. We also care for patients who have pulmonary complications due to curvature of the spine, or other orthopedic conditions, and patients with blood disorders that also affect respiration, such as sickle cell anemia."

Because of the lung's enormous surface area and its location in the path of the circulating blood, Dr. Mellins says, "the lung is an ideal organ to regulate the concentrations of a variety of important and potent chemicals that influence the circulation. It's the gatekeeper. Looking at the lungs in this way has given us a fresh approach to treating common problems in childhood lung disease. With this perspective, we may discover some important origins of adult lung diseases."

THE CAUSES OF ASTHMA COME INTO FOCUS

Asthma, which is the most common chronic lung illness in children, may be due, in part, to substances that cause the airways in the lung to constrict. "The lung may be involved somehow in controlling these chemicals. We are gaining both a broader understanding and a sharper focus on the disease by studying the chemicals in the lung," says Dr. Mellins.

One 17-month-old patient came to PH with an unusual lung disorder: she had extremely high pressure in her lungs' blood vessels. "She had what would have been a fatal condition a few years ago," says Dr. Mellins. "By carefully studying how the chemicals in the lungs regulate blood pressure, we were able to use drugs to control her pressure. She is fine now. Five years ago, her condition would have been fatal," explains Dr. Mellins. ■

Joseph Alvarez takes a pulmonary function test.

ASSURING THE SURVIVAL OF THE SMALLEST

Neonatal ICU nurses encourage bonding between a set of newborn twins

The 12th floor of The Presbyterian Hospital's Center for Women and Children can accommodate 4,000 births a year. Most of the new arrivals will be whisked down to the nurseries on the sixth or seventh floors after they've had a chance to get acquainted with their mothers and fathers in the birthing suites.

Newborns who are in distress are taken to the Transitional Care Nursery next to the delivery room, where the staff decides whether they can go to the nursery for normal infants. This nursery has facilities to save the lives of infants who otherwise might have died.

Premature babies weighing 1,500 grams or less automatically are transferred to the Neonatal Intensive Care Unit after they are stabilized in the Transitional Care Nursery. "It's an ideal arrangement. The sooner we can give these very sick babies the special care they need, the better," says Jane McConville, associate director of Maternal/Child Nursing.

CLOSE COLLABORATION HELPS SAVE TINY LIVES

"Years ago, the premature nursery was the quietest place in the Hospital because there was so little we could do for these infants. Now, it's one of the busiest places, because of the technology and skill we use to care for them," she adds.

Eighty nurses work on the Center's 12th floor alone, in addition to the pediatric house staff, neonatal fellows and specialists in neonatology, obstetrics, anesthesiology and nutrition, plus a full-time social worker. The close collaboration of these fields has led to the emergence of perinatology, which integrates all of these activities.

Not only can these low-birthweight babies survive, but the majority pull through their ordeal very much intact.

SURVIVAL RATE CLIMBS TO 93 PERCENT

Dr. John Driscoll, director of the Neonatal ICU, says that 10 years ago, only 29 percent of the low-birthweight babies (between 1,000 and 1,500 grams) survived. Today, the survival rate is 93 percent. "These miniature babies are perfectly formed. They just need to grow in size, and their organs — particularly their lungs — need to mature. About 80 percent grow up totally normal, while the remaining 15 to 20 percent develop some neurological or mental deficit," he explains.

Monitoring equipment and various forms of advanced diagnostic instrumentation, such as blood gas analysis, sugar analysis and transcutaneous (through the skin) oxygen electrode monitoring have been very important for the moment-to-moment management of these babies, says Dr. L. Stanley James, director of the Division of Perinatology.

"Because the obstetrics and pediatrics sections work so closely together, we have a planned approach — there are no surprises. We can care for the infant the moment it's born, whether it's a routine or complicated birth," says Dr. James.

NEONATAL ICU IS SOME INFANTS' HOME FOR MONTHS

For the very low-birthweight babies, the Neonatal ICU can be home for several months. During that time, the staff encourages family involvement so that the parents don't feel isolated from their newborns. Parents are encouraged to take their infants out of their incubators and to hold them for short periods.

A CELEBRATION OF LIFE

Annual reunions at the Hospital every June give these youngsters a chance to get together, share experiences and celebrate life. For the children, it's a matter of getting on with the business of childhood. For someone like Kiyoko Loizzo, administrative nurse clinician, who's seen them struggle through their toughest days in the ICU, it's an emotional experience: "It's such a beautiful day. When I see them running under the June skies . . . it's overwhelming to see their collective vitality."

Much of the credit for the quality of life experienced by these youngsters after they leave the Hospital goes to a follow-up program for the low-birthweight babies. Under the direction of Dr. Yvonne Driscoll, the progress of the premature babies is followed from the time of discharge until the infants reach age 6. ■

IN VITRO FERTILIZATION OFFERS A NEW CHANCE

Until recently, many infertile couples were told that they had no chance of conceiving a child. "Finally, they have a 20 percent chance," says Dr. Elynne B. Margulis, medical director/coordinator of the *in vitro* fertilization program at The Presbyterian Hospital.

In vitro fertilization, in which eggs are removed from a woman's ovaries, fertilized with her husband's sperm in a small glass dish and transferred to the uterus as an embryo, is the most advanced treatment available for certain kinds of fertility disorders.

Since the opening of the Hospital's program in January 1983, the first of its kind in New York City, the *in vitro* staff has amassed a 2½-year waiting list. Ages of women in the program vary, but priority is given to married women who never have had a child, and who have missing or diseased fallopian tubes. Preference is given to women whose infertility is due to tubal factors, but other causes of infertility also are considered.

At present, the program can accommodate about two new patients a week. Within a year, Dr. Margulis expects that number to climb to about eight a week.

MUST UNDERGO FERTILITY TESTS BEFORE ACCEPTANCE

Many interested couples apply to the program, but have not undergone the fertility tests that must precede acceptance.

"We can't see anyone until we receive a letter from the woman's gynecologist that includes her records. After that follows a personal interview, a physical examination, counseling and psychological support of patients. We go over the soup-to-nuts procedure to let them know what they should expect," Dr. Margulis says.

EACH STEP IS SIMPLE BUT THE PROCESS IS COMPLEX

Although each step of the process is simple, *in vitro* as a whole isn't, explains Dr. Raymond L. Vande Wiele, director of the Obstetrics/Gynecology Service at the Hospital. "The fertilization and embryo transfer are based on separate tests and steps. We know how to do each step, but they're difficult to coordinate."

A patient accepted for *in vitro* fertilization alerts the staff when her menstrual period begins. For a period of time, usually between the third and 12th days of her cycle, hormones are administered to stimulate the ovaries to produce eggs. By hormonally stimulating the ovarian follicles, a greater number of eggs is brought to full maturity, thus improving the chance of fertilization.

Retrieving eggs via a laparoscopy — Michael Reingold

During the period of hormonal stimulation, which lasts 10 to 14 days, an ultrasound specialist observes the daily development of eggs within the follicle.

'RIPE' EGGS ARE HARVESTED

When the follicle is mature, another hormone is administered to produce ovulation.

When the eggs are "ripe," or ready for retrieval, they are harvested with a laparoscope — a small optic instru-

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INFERTILITY: HOPE CONQUERS DISCOURAGEMENT

They married when they were 22 and had planned to have their first child by age 30, after achieving secure jobs, an established income and a home. Now Arlene and Michael (not their real names) are 36. They have their careers and home, but they remain childless after six years of trying to conceive. They still cannot explain why: "I never expected any problems becoming pregnant," Arlene says.

Those words echo the discouragement and puzzlement of countless couples who want to have children. After waiting and hoping for years, many turn to fertility specialists for answers and results.

Michael and Arlene are among those couples. They sought out three fertility specialists before learning of the *in vitro* fertilization program at The Presbyterian Hospital. *(In vitro* fertilization involves the removal of eggs from a woman's ovaries, fertilization with her husband's sperm in the laboratory, followed by the return of the embryo to the uterus. (See story, page 8.)

QUEST FOR FERTILITY

Their quest for fertility began after Arlene, who was 30 at the time, had a miscarriage following two months of pregnancy. Afterward, she discovered that she could not become pregnant again. A year later, she consulted a specialist who discovered endometriosis. Arlene took the prescribed medication, and after a year, still could not become pregnant. At age 33, she tried another specialist, who found that her system created antibodies to sperm, and that she had a persistent infection, which took months to clear.

During this time, Michael was tested for such fertility problems as seminal duct blockage, hormonal deficiencies, vascular problems and sperm motility. He was normal on all tests.

The couple then sought another opinion, another doctor, another hope. Their new specialist attempted artificial insemination, but that, too, failed. By then, they had learned of the *in vitro* fertilization program at the Hospital.

NEW PROGRAM IS THE LAST RESORT

For this couple and others, *in vitro* fertilization is the last resort. For the majority of women undergoing *in vitro* fertilization, diseased or missing fallopian tubes are responsible for infertility. In Arlene's case, the cause of her infertility is unknown. "We're the kind of people who like to know we've exhausted every avenue. At least we can say we tried and it's just not meant to be, if that's the case." In the meantime, the couple has filed papers to adopt a child.

Dr. Raphael Jewelewicz, associate attending obstetrician/gynecologist at PH, says that if a couple cannot achieve pregnancy within two years of trying, it's considered infertility. But, he adds, like all definitions, it's arbitrary.

TESTS PINPOINT CAUSE OF INFERTILITY

If a female patient seeks out fertility testing and treatment, she must undergo a battery of tests to help pinpoint the cause, Dr. Jewelewicz explains. This includes checking to determine whether ovulation is present and normal and if the fallopian tubes are open or closed, performing a biopsy of the mucous membrane of the uterus, testing hormones in the blood, preparing X-rays of the uterus and performing a laparoscopy, in which the pelvic organs are examined.

When the tubes are closed, they often can be opened by means of microsurgical techniques, Dr. Jewelewicz says. "If surgery is not successful, the patient is referred to the *in vitro* program."

Dr. Hembree specializes in andrology, a field which deals primarily in male reproduction. "A lot of men still don't recognize that they might be the problem. Men have equated their potency and sexuality with reproduction. Meantime, women have been expected to dissociate sexual function from reproduction."

When a patient is referred to Dr. Hembree, he sees the man as part of a couple: "It's a couple's problem and both people have to learn to support each other. It can be debilitating to have two people with an attitude like 'you get it fixed, it's your problem,' so we approach them as a unit."

Dr. Hembree is a consultant to the New York Male Reproductive Center at the Hospital.

LABORATORY EVALUATION IS EXTENSIVE

After obtaining a patient's reproductive history and the results of a physical examination, a laboratory evaluation is made. Tests will show a man's hormone levels, indicate whether there is any endocrine or systemic disease, and give a sperm production and motility analysis.

If the results point to the man, the evaluation continues. Possible trouble spots include varicose veins in the scrotum, infection, sperm antibody production and an endocrine deficiency or abnormality. Also, medication for certain illnesses could interfere with the sperm count.

In some cases, there is no definable cause for a low sperm production, he explains. "We can help men who don't make enough normal sperm, but who do produce enough for recovery in the *in vitro* fertilization program. Fertilization that occurs naturally requires about 40 million to 50

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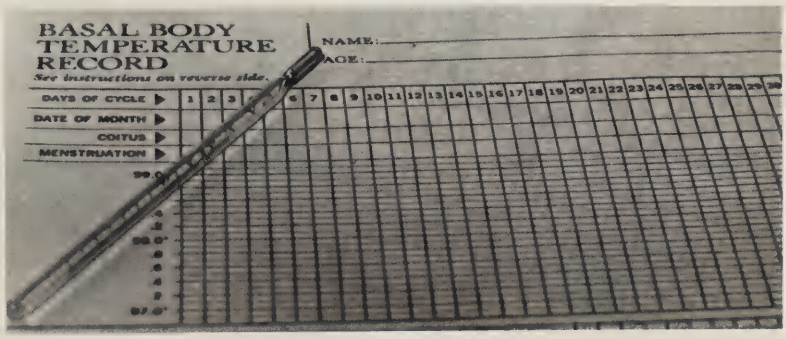

Chart and thermometer are used to follow ovulation.

A CONSIDERATION OF THE MALE FACTOR

On the other hand, the inability to conceive could be due to a male factor. "It's taken so long for us to stop looking at the woman only, and to consider that the man might be at cause," says Dr. Wylie Hembree, associate attending physician in obstetrics and gynecology at PH.

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million sperm, while *in vitro* can work with half a million. We have decreased the number of normal sperm required for a pregnancy by approximately one-hundredfold using the *in vitro* technique."

MISTAKEN INFERTILITY

Some people who think they are infertile actually may not be, says Dr. Dorothy Warburton, director of the Genetics Diagnostic Laboratory. "There's evidence that some people who appear incapable of conceiving actually do conceive, but have early miscarriages, or spontaneous abortions, within two weeks of pregnancy without the woman's knowledge."

Miscarriages are common, occurring in about one in every seven pregnancies, Dr. Warburton notes.

"Fifty percent of all recognized early miscarriages are the result of chromosomal abnormalities. Somewhere between 3 and 5 percent of all embryos have chromosomal changes and are eliminated as miscarriages during early gestation. It's nature's way of helping to eliminate severe abnormalities," she says.

In most such cases, the parents' chromosomes are normal, and their chances for another successful pregnancy are good. In about 4 percent of couples with recurring miscarriages, a chromosome rearrangement in the mother or father is responsible, and the risks for other pregnancies is higher.

Patients who have experienced two miscarriages usually are referred to a genetics counselor, who arranges for studies of the parents' chromosomes. The blood cells are grown in a culture, then the chromosomes in dividing cells are photographed and examined to determine whether they are normal.

CHROMOSOMAL ROLE IN FERTILITY STUDIED

"While chromosomes can cause miscarriages, chromosomal problems rarely are responsible for a couple's total inability to conceive," Dr. Warburton explains. "Genetics problems don't always repeat themselves. It's like a toss of the dice: 25 percent of the sperm or eggs may be unable to support a normal conception, while the remainder are OK. For this reason, in some cases, a chromosomal study can give the couple good news. If the problem is hormonal or anatomical, the infertility may be more difficult to treat." ■

IN VITRO *continued from page 8*

ment which is inserted into the patient's abdomen. The physician identifies the ovaries and removes the eggs from the follicle with the aid of a tiny suction device on the laparoscope.

Following fertilization with the husband's sperm, and a brief incubation period to confirm that normal development is occurring, the egg, now an embryo, is transferred back to the uterus through a small catheter.

FERTILIZATION REQUIRES SIX TO 12 HOURS

Whether the fertilization process occurs naturally or *in vitro*, it takes between six and 12 hours, Dr. Vande Wiele says.

Just as in the natural situation, growth of the fertilized egg may stop once it begins, or, the fertilized egg may grow and develop into an embryo.

After the egg undergoes fertilization and incubation, it is ready to be returned to the woman. However, only a fraction of the transferred eggs are likely to "take," explains Dr. Margulis. For this reason, whenever possible, more than one embryo is transplanted, because it increases the likelihood of a pregnancy.

HOW IN VITRO SUCCESS RATE COMPARES WITH NATURE

The 20-member PH *in vitro* team consists of physicians who handle patient screening, ovulation monitoring, harvesting of the eggs and reimplantation of the embryo. There is also a psychiatrist, an egg preparation specialist, a nurse practitioner, hormonal and ultrasound specialists and technicians.

Dr. Elynne B. Margulis documents cell growth for in vitro fertilization.

The team must be available on a round-the-clock basis for the program to be successful, Dr. Margulis says. "We have no idea when the eggs will be ready for harvesting. When the time is right, we have to swing into action."

If the first embryonic transfer is unsuccessful, each couple can have two more tries, Dr. Margulis explains. "Nature itself isn't very efficient. A fertile couple is not assured of becoming pregnant on the first try," she reminds. "It takes an average couple about three months to conceive, which is about a 31 percent success rate. With the *in vitro* success rate at 20 percent, we're not that far from nature." ■

CHILDHOOD CANCER: A BRIGHTER PICTURE

For Michele Lopez, 1976 should have been a good year. It was the first year of her life. But when she was 8 months old, she was found to have cancer. The diagnosis: neuroblastoma, a cancer originating in the nervous system.

That year, 2,603 children died from cancer in the United States, but Michele was one of the lucky ones. She made it.

The National Cancer Institute estimates that 1,600 children under the age of 15 will die of cancer in 1983. Although cancer is second only to accidents as the leading cause of death in children, the child who is diagnosed as having cancer has a better chance of survival than ever before.

In the past 10 years, the treatment of childhood cancer has made very rapid progress, says Dr. Sergio Piomelli, director of the Hematology/Oncology division at the Babies Hospital division of The Presbyterian Hospital.

"For some types of childhood leukemia, the cure rate is almost 100 percent. Leukemia in children is very treatable now," says Dr. Piomelli. "Other types of tumors, such as Wilms' tumor, are almost completely curable."

"When the pediatrician told me my daughter Michele had neuroblastoma, I thought 'I'm dreaming this,'" says Diane Lopez, Michele's mother. "Michele was only 8 months old and she never even had a cold. I took her for a scheduled checkup to her pediatrician here in Oakland, N.J., and we ended up at The Presbyterian Hospital," she says.

When Michele was diagnosed, there was a tumor above her kidney and the cancer was spreading. "At first, the doctors told us her chances weren't too good," Mrs. Lopez recalls. "When we got to Presbyterian, she was scheduled for surgery the following day, and, thank God, they removed the main tumor and said her prognosis looked promising with chemotherapy."

TEAM APPROACH YIELDS SUCCESS

Dr. Anneliese Sitarz, associate attending pediatrician, treated Michele with a drug that was relatively new, and Michele is now a healthy youngster.

"Michele has been in remission for more than six years and she's as fresh as a daisy. It was a miracle as far as I'm concerned," Mrs. Lopez adds.

Dr. Anneliese Sitarz, at right, visits neuroblastoma patient Leon Moreau and his parents.

Dr. Piomelli and Dr. Sitarz attribute the success in the treatment of childhood cancer, in part, to the team approach which is used here. "We have surgeons, radiologists, radiotherapists, nurse specialists as well as oncologists all working together to treat the cancer patient."

RARE CASE BECOMES LESS RARE

Not only do many of our health professionals at the Hospital collaborate in the treatment of cancer, but, Dr. Sitarz adds, since 1957, this Hospital has been a member of the National Institute of Health sponsored Children's Cancer Study Group. This has allowed collaboration among 28 medical centers throughout the United States and Canada. Data are pooled and evaluated on an ongoing basis.

"When there is a larger pool of information, the rare case becomes less rare," Dr. Piomelli explains. "We may see only 10 cases a year of one type of cancer, but because of our communication with these other institutions, we may have 100 past cases as references."

At PH, the emphasis is not only on the child, but on helping the entire family cope with the disease. To make the hospitalization less traumatic for both child and parent, Dr. Piomelli says, "Some of our patients can receive treatment in our day hospital. The children come here during the day for their treatment and go home at night."

For children who must be hospitalized, the staff works together to help both the parent and child deal with the treatment, and the implications the disease will have on the child's life.

Penelope Buschman, RN, an administrative nursing clinician in child/adolescent psychiatric nursing, says, "Some families need help explaining to their children why they have to be hospitalized. For other families, it's dealing with feelings of anger or depression. Often families want to know how to handle their other children during the stressful periods of hospitalization and treatment. Our staff assesses the needs of each child and family individually, and we tailor our care to those needs."

For an older child, dealing with the implications of the disease can be very difficult. Lisa Iannacci, RN, oncology nurse specialist, says, "An older child can understand the implications of the disease and the possibility of death. For adolescents who are struggling to realize their independence and individuality, the disease and treatment become a devastating interruption in this process.

"The challenge is to help the child draw upon his own resources, his family's strength, and the support of this staff so that he can live with his illness." ■

TREATMENT PREVENTS A LIFETIME IN DIAPERS

By the time most children reach age 2, they've shed their diapers. Yet some tots have grown into adulthood wearing diapers — until recently.

Certain conditions, such as meningomylocele, affect the nerves that lead to the bladder, leaving these children with poor bladder control. In the past, youngsters with such diseases had two choices: face a lifetime in diapers, or undergo surgery to reroute their urine into bags attached to their skin.

During the last decade, a new nonsurgical method to liberate them from diapers has been developed and is being used at The Presbyterian Hospital.

"A normal bladder does two things," says Dr. Terry Hensle, director of Pediatric Urology at PH. "It stores urine and it empties urine. This new method, called Clean Intermittent Catheterization (CIC), takes advantage of the bladder's storage ability. With the help of medication, the bladder is safely paralyzed so that it can more effectively store urine. Then we teach the patient to empty his bladder himself by using a small catheter. This method has totally changed the outlook for children born with this problem. It keeps them dry, the child avoids surgery and, perhaps most important, it allows the children to participate normally in activities with other children."

THE PROCEDURE IS QUICK, PAINLESS, EASY

Using the CIC method, the child or his parents learn to insert a small, disposable catheter into the bladder so that it can drain. The procedure is quick, painless and easy. The pocket-sized catheters are easy to carry and simple to use. CIC takes only a few minutes and needs to be repeated about every four hours.

Jeanne Figueira, RN, Pediatric Nursing Care Clinician, runs the CIC teaching program. "It's very easy to teach because the kids are anxious to learn a way to get out of diapers," Ms. Figueira says. "They are a highly motivated group. With the 5- and 6-year-olds, we teach the parents to do it. But the older children learn to do it themselves. We had one 17-year-old girl who had been in diapers since childhood and wasn't sure she would be able to do the procedure once she got home. So she locked herself in the bathroom for two hours to practice. The next time we saw her, she had changed completely and we almost didn't recognize her. She had lost weight, was stylishly dressed and was thrilled with her new lifestyle. So was I." ■

DIAGNOSING HIGH-RISK INFANTS WITH SOUND

In the past, pediatric cardiologists could not see many of their patients: they were still in their mothers' wombs. Today, doctors at The Presbyterian Hospital use sound waves to construct an image of a fetus's heart chambers, and to examine the flow of blood through its blood vessels.

"Previously, we knew that about six in 1,000 babies would have some sort of congenital heart disease. But we had no way of knowing which baby would be that one, and we couldn't offer it any kind of therapy until after it was born," says Dr. Frederick Z. Bierman, a pediatric cardiologist at the Babies Hospital division of The Presbyterian Hospital. "With echocardiography, we can examine the fetus, without using contrast medium or X-rays, and make a diagnosis before the infant is born."

NEW APPLICATION OF AN ESTABLISHED TECHNIQUE

Although echocardiography is an established technique, the Hospital is one of the first in the country to apply it to the unborn. The fetal heart measures midway between the size of a quarter and a 50-cent piece. This sophisticated system allows doctors to look at subdivisions within that quarter-sized area.

"If a pediatric cardiologist finds that a fetus has a problem with its heart that puts the baby at high risk, we can reduce the hazards by modifying the prenatal care," says PH obstetrician Dr. Edward Bowe. "This technique may help us to take a whole new approach to managing high-risk pregnancies."

Echocardiograms are similar to conventional sonograms, which have become a routine part of prenatal care, Dr. Bowe explains. By using conventional sonograms, doctors can determine the size and age of the fetus, and examine its static or "quiet" organs. Unlike echocardiograms, however, conventional sonograms give doctors little information about the condition of the fetus's heart, or the flow of blood through its umbilical cord, veins and arteries.

SOUND WAVES ARE AIMED AT THE FETAL HEART

Echocardiography works in much the same way as sonar. High-frequency sound waves are aimed at a target inside the mother, for example, at the fetal heart. The echoes, or rebounding waves, are examined by a computer, which times the round trip the sound makes. It "knows" how fast the sound waves move, and thus can calculate how far they travel. With this information, the computer can translate the sound waves into an image of the heart, inside and out.

"The computer also can monitor changes in the speed of the sound waves. The speed will vary, depending on the way blood is pumping through the heart," says Dr. Bierman. "We can see how well the heart is functioning, as well as how it has formed, even though we are looking at a moving organ through nearly four inches of tissue."

In fact, an echocardiogram can pick out details as small as 1½ millimeters. "That's about the thickness of a quarter," says Dr. Bierman. "We also can monitor the blood flowing through a vessel as thin as a wooden matchstick."

Echocardiography is painless for both mother and child. Doctors using the technique can obtain the best pictures of the heart when the fetus is about 30 weeks old. The heart is visible earlier, but its very small size makes the structures less distinctive. ■

Dr. James

PEDIATRICS: **Dr. L. Stanley James,** director of the Division of Perinatology, received the Weinstein Goldenson Award from the United Cerebral Palsy Research and Educational Foundation in April. The medical research award is given for scientific endeavor which has made a particularly important contribution to the research and clinical aspects of cerebral palsy. During the presentation, Dr. James was cited for his contributions in the field of perinatal medicine which have made the birth process safer and enabled effective resuscitation of newborn infants.

Alumni Day at the Babies Hospital division of The Presbyterian Hospital was held April 22. Dr. Paul F. Wehrle, director of Pediatrics at the University of Southern California School of Medicine, gave the Hattie Alexander Lecture, entitled "Bacterial Meningitis, A Continuing Problem."

MEDICAL AFFAIRS: **Dr. Thomas A. Blumenfeld,** vice president of Medical Affairs, represented The Presbyterian Hospital at a recent New York State Department of Health conference on "Professional Misconduct and Physician Discipline." Dr. Blumenfeld served as a panelist in a session on "Institutional Roles and Responsibilities in Professional Discipline."

OPHTHALMOLOGY: **The Neurobiology Laboratory** at the Edward S. Harkness Eye Institute has received a donation of $137,000 from the House of St. Giles the Cripple, a philanthropic foundation dedicated to aiding the physically handicapped. The laboratory conducts research aimed at understanding and treating hereditary diseases of the retina.

PHILHARMONIC SUBSCRIPTION WILL AID PEDIATRICS

A special offer is available for Stethoscope readers. Excellent subscription seats to the New York Philharmonic now are available by contacting Linda Burt at (212) 580-8700, x200. Mention the Babies Hospital unit of The Presbyterian Hospital and receive a 15 percent tax deduction.

RADIOLOGY: **Dr. Walter E. Berdon,** director of the Pediatric Radiology Service, presented a refresher course with Dr. David H. Baker, director of Radiology, entitled "Pediatric Radiology in the Area of Multiple Imaging Modalities" at the American Roentgen Ray Meeting.

Dr. Sara J. Abramson, attending radiologist, presented a lecture entitled "Simultaneous Esophageal pH Monitoring and Radionuclide Scintigraphy in the Evaluation of Pediatric Patients Suspect for Gastroesophageal Reflux" to the European Society for Pediatric Radiology in Paris.

PSYCHIATRY: **Donald S. Kornfeld,** chief, Consultation Liaison Psychiatry, served as co-chairman at two meetings of the American Psychosomatic Society in March. **Dr. Joseph Sweeting,** attending physician, served on a panel discussion of "Doctors' Feelings as a Factor in Medical Care." **Dr. Philip Muskin,** assistant attending psychiatrist, participated in a panel discussion on "Undergraduate Medical Education." **Dr. Paul Trautman,** director of the Division of Child Psychiatry, received a project grant to study a comparative treatment and follow-up of adolescent girls who attempt suicide. The grant has been funded by the W. T. Grant Foundation for a three-year period.

UROLOGY: **Dr. John K. Lattimer,** director emeritus of the Urology Service and consultant to PH, has been awarded the prestigious Valentine Medal and Award for outstanding work in urology by the New York Academy of Medicine. This $5,000 award is given to the urologist, from any part of the world, whose life's work is judged to have merited this honor.

Dr. Lattimer was director of the Urology Service for 25 years and was instrumental in eradicating kidney tuberculosis, a once-fatal disease. He also was a pioneer in pediatric urology and urodynamics.

The title of his oration upon accepting the award was "Kidney Tuberculosis: An Account of a Lethal Disease and How It Was Conquered in Our Time."

Members of the Fellowship of Academic Neurosurgeons recently attended a scientific program at the Neurological Institute sponsored by Dr. Bennett M. Stein, director of the Neurological Surgery Service at PH, second from right, front row.

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THE SKIN: THE MIRROR OF HEALTH

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IMPORTANT NOTICE TO OUR READERS

You are invited to participate in The Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity, unitrust life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information, call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

ABOUT THE COVER

Ultraviolet light surrounds a patient receiving PUVA treatment for psoriasis in a photo-therapy cabinet at The Presbyterian Hospital's unique Ambulatory Psoriasis Treatment Center.

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THE SKIN: THE MIRROR OF HEALTH

The skin often is considered merely a wrapper that holds all of the muscles, tissue and organs in place. But it is the largest, and possibly most unappreciated, organ in the body.

An average-size person's skin measures about 2 square yards and weighs more than 10 pounds. The skin ranges from the approximate thickness of a dime, in the eyelids, to four times that in the palms and soles.

The skin protects the body in many ways: it perspires to maintain body temperature, it secretes oil to keep itself lubricated, it keeps out infectious agents, it develops melanin to shield its wearer from the harmful effects of sunlight, it manufactures vitamin D and it grows other things, such as nails and hair, to offer protection.

Every 36 days, a person completely replaces his outer layer of skin and a new one develops. In that time period, the skin cell works its way up from the bottom, or basal cell, layer to the dead outer, or horny, layer.

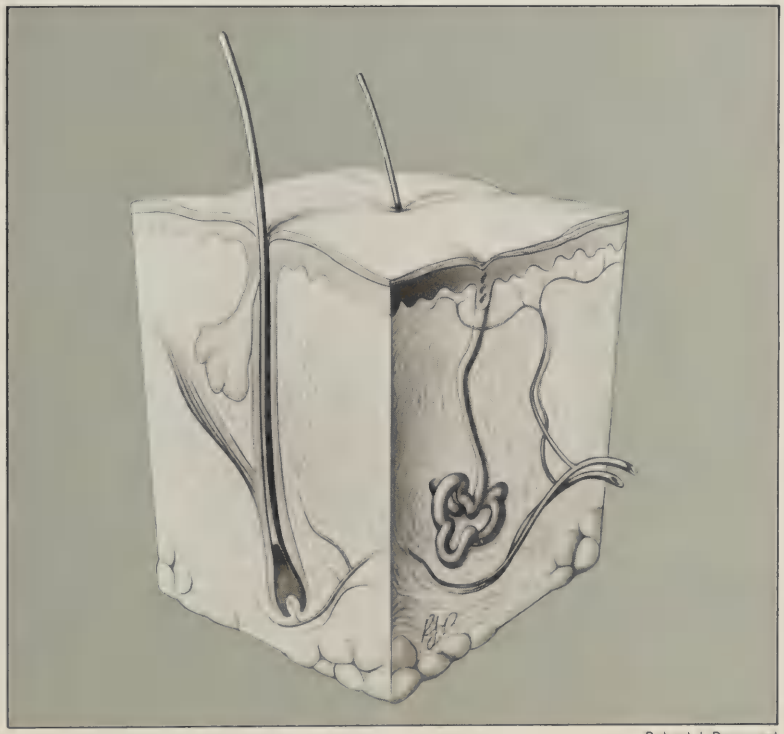
While it waits to be shed, the horny layer helps to protect the skin by scattering the harmful wavelengths of ultraviolet light in the sun. This layer of dead cells also contains the chemical urocanic acid, which acts as a natural sunscreen.

SKIN CELLS ARE REPLACED CONTINUOUSLY

Beneath the protective horny layer is a layer of living cells, 20 cells thick—the epidermis. Cells within this layer move gradually up toward the horny layer and are replaced by continuous cell division in the basal cell layer, the lowest level of the epidermis.

Beneath the epidermis is the dermis. The dermis is composed of water, cells, blood vessels, elastic tissue, collagen (a group of proteins that forms the major component of the connective tissue) and such downward protrusions of the epidermis as the sebaceous glands, which lubricate the skin, the hair follicles and the sweat glands. Together, these substances and structures form an underlying tough, but pliable, tissue.

In many diseases, symptoms first appear in the skin, giving dermatologists important clues as to what problems may be lurking inside the body. ■



Cross-section of the skin shows the cell layers of the epidermis and the underlying dermis.

Robert J. Demarest

SHEDDING NEW LIGHT ON LIGHT-SENSITIVITY DISEASES

• Every time the pilot flew, she carefully arranged her route so that she traveled east at night and west in the morning so that the sun was at her back. The problem: a light-sensitivity disease that caused her to break out in an uncomfortable rash even though the light filtered through the cockpit's thick window glass.

• When a truck driver with a fine work record suddenly began to arrive at his depot with a fiery red face, his boss assumed that the driver had become an alcoholic and fired him. The problem: a medication had caused the driver's face to redden as a direct effect of the sunlight upon the drug.

• Doctors were stymied by a homemaker who went from specialist to specialist to learn why her skin broke into hives after a few seconds in the sunlight. No one could explain her condition because the hives always disappeared when she went into a doctor's office. As a last resort, she sought help at The Presbyterian Hospital. The day she came in for tests, a resident accompanying her from one building to another saw the hives erupt under direct sunlight. Doctors here were able to confirm that the homemaker suffered from the light-sensitivity disease solar urticaria, or sun hives.

After diagnosis and treatment at the Hospital, these three patients were able to resume their normal lifestyles.

PH IS WORLD RENOWNED AS A LIGHT-SENSITIVITY REFERRAL CENTER

PH is a world referral center for the diagnosis and treatment of all known light-sensitivity diseases. The disease may be as severe and potentially fatal as Erythropoietic Porphyria (see page 6) and xeroderma pigmentosum (see page 5). Or, it may be as simple a reaction as a rash on light-exposed areas during the spring and summer months.

"There is no test or technique for diagnosing a light-sensitivity disease that we don't have here," says Dr. Leonard C. Harber, director of the Dermatology Service.

"Our expertise is in photobiology, which is the study of the effects of ultraviolet and visible light on the skin of humans. We also have been leaders in developing tests to diagnose and treat people with light-sensitivity diseases."

Dr. Leonard C. Harber examines the swollen, blistered hands of a patient with a light- sensitivity disease.

SKIN CANCERS: 90% ARE CURABLE

Most people are, by far, more concerned with roasting themselves to the perfect tan than with the risk of skin cancer to which sun exposure is related.

"Fortunately," says Dr. Robert R. Walther, chief of the Dermatology Clinic at The Presbyterian Hospital, "although there are nearly 500,000 new cases reported annually, more than 90 percent of skin cancers are curable. And, even the most serious forms can be treated successfully if caught early enough. Less than 5,000 result in death — mainly from a rare type of cancer called melanoma."

What are the different forms and signs of skin cancer?

The basal cell variety is the most common, and the least serious. It usually appears on the head and shoulders, but rarely spreads. Squamous cell cancer is somewhat more dangerous, but much less common. In addition to forming on the head and shoulders, it also may appear on the hands, lips and tongue. The early signs of both are similar, and include scaly or raised, waxy looking blotches on the skin, and bumps that may bleed, and do not heal.

Malignant melanoma usually begins as small, dark moles on the skin, which over time, change color and bleed or ooze. It can, however, spread throughout the body and is considered to be the most deadly skin cancer. ■

FOCUS IS ON ABNORMAL REACTIONS TO LIGHT

"Everyone reacts to a certain amount of sunlight. Here, we are concerned with abnormal reactions to light," says Dr. Robert B. Armstrong, assistant attending dermatologist.

Skin cancer is the most common of the light-sensitivity diseases, with more than 400,000 cases reported each year in the United States. After years of exposure to the sun, pre-cancerous growths, wrinkles and dry skin develop, often followed by malignancies of the skin.

RANGE OF SUBSTANCES CAN CAUSE SENSITIVITY TO LIGHT

"Many of the things that we unsuspectingly put in and on our bodies may cause this sensitivity to light. Common medications, such as antibiotics and diuretics can have this effect. Perfumes, fragrances in cosmetic products and components of sunscreens also may produce the same phototoxic reaction," says Dr. Vincent A. DeLeo, assistant attending dermatologist.

Light can aggravate previously existing conditions, such as lupus erythematosus and dermatomyositis, both diseases of the connective tissues.

Some diseases that are worsened by light produce a reaction in the skin which is believed to be allergic, called a photoallergic reaction. This can result from chemicals that the body produces when exposed to sunlight. In some people, these chemicals act as antigens that set off immunologic reactions in the affected organs.

SOME LIGHT-SENSITIVITY DISEASES ARE DUE TO GENETIC CAUSES

In some cases, the cause of a light-sensitivity disease may be genetic, as in xeroderma pigmentosum. However, there are other instances in which the cause of the disease is unknown, says Dr. DeLeo. Hydroa vacciniforme appears in some children as blisters, similar to those which occur after vaccination. Every year, hydroa vacciniforme recurs in these children during the summer months. As the children grow older, the condition begins to ease.

Just as the causes of light-sensitivity diseases vary, the types of light to which patients may be sensitive also vary. There are many types of light, each with its own characteristics. Sunlight is made up of different types or wavelengths of light.

PATIENTS ARE EXPOSED TO SEVERAL DIFFERENT LIGHT SOURCES

When a patient is referred to the Dermatology Service, a diagnosis is made using the patient's history, blood and urine tests and special light source tests. Small areas of skin are exposed to a number of light sources at various levels of intensity. The test results, along with standard laboratory tests and skin biopsies, help to determine the disease that is causing the problem.

Some tests are performed with a spectrodermagraph, the only machine of its kind in existence, which was developed by researchers here in collaboration with scientists at the Bell Laboratories.

"This machine can help us determine whether there is a light-sensitivity problem and what kind of light is causing the problem," explains Eileen

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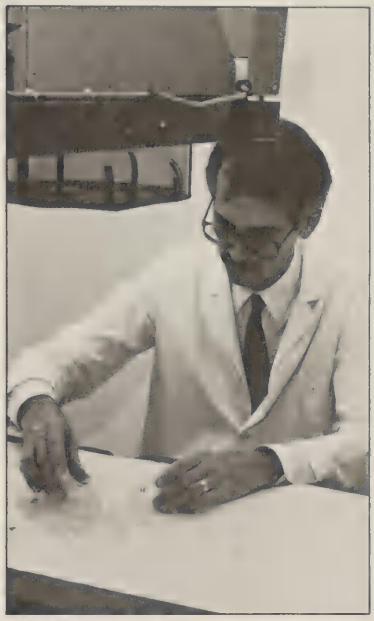


Dr. Vincent A. DeLeo irradiates tissue cultures to study the effects of ultraviolet light on the cell membrane.

Eileen Enny Leach, RN, administers light-sensitivity tests to determine a patient's reactions to natural sunlight and common chemicals found in soaps, sunscreens and fragrances.

Enny Leach, RN, and clinical research assistant.

SOME TREATMENTS ARE SIMPLE; OTHERS ARE EXPERIMENTAL

In some cases, the patient may have no reaction to light source tests, but blood tests and skin biopsies could indicate the presence of diseases such as lupus or porphyria, she says.

Depending on the problem, the treatment may be as simple as prescribing a sunscreen to block out ultraviolet rays, or, it may involve an experimental treatment for a more difficult case.

For example, a case of sun hives might call for an experimental treatment. Victims typically develop hives after a short time in the sun. Through testing, dermatologists determine which part of the light spectrum sets off the reaction.

TREATMENT INCREASES PATIENT'S TOLERANCE TO LIGHT

Then, "by exposing the patient to small amounts of the offending light spectrum, we can deplete the reaction temporarily, so that eventually, the person can tolerate a greater amount of sun exposure without developing an abnormal reaction to light," says Dr. Armstrong.

"It's similar to not having gas to run a car. The car is there, but it can't move because it has no fuel. That's how we deal with these chemicals in the body — they're still there, but they can't react when we reduce their level. The depletion usually lasts only a few days or a week and the patient returns for a repeat exposure. With repeat visits, he should never build up enough of a reaction to have any symptoms."

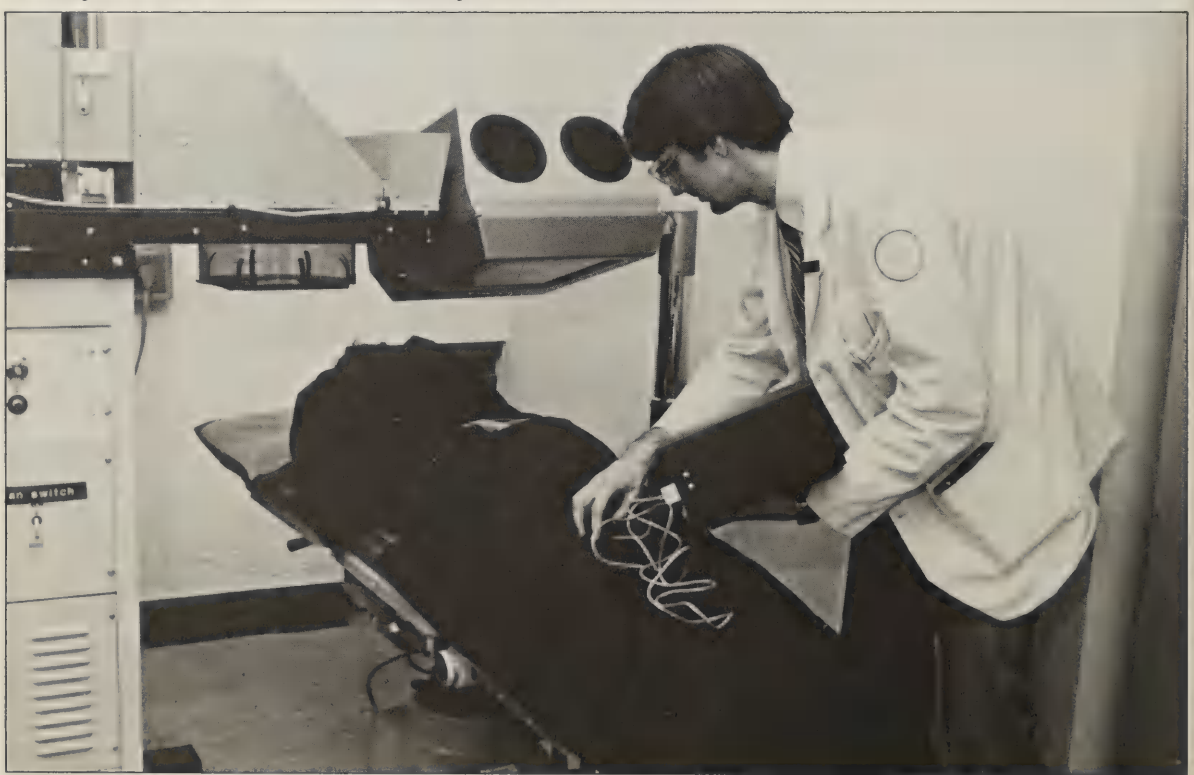
Cells in the skin contain a chemical which is released when light hits the skin. When the chemical, called histamine, is released, the blood vessels swell and the result may be a hive. Once the supply of histamine in the skin is depleted, it can take from 24 hours to several days for the histamine to replace itself.

CPMC: A CENTER FOR RESEARCH IN LIGHT-SENSITIVITY DISEASES

In addition to expertise in the diagnosis and treatment of light-sensitivity diseases, CPMC is a major center for basic science and clinical research. Dermatologists and other specialists nationwide come here for training in photobiology.

Many problems which once were disabling or fatal now can be controlled through early diagnoses and innovative treatments. As a result of the diagnostic and treatment capabilities available here, many patients with rare light-sensitivity conditions have been able to get on with their lives. And, with the affiliated research programs at Columbia University's College of Physicians & Surgeons, dermatologists continue their research role in predicting which new chemicals probably will cause these reactions, how they damage the skin, and hopefully, how new light-sensitivity reactions can be avoided altogether. ■

Dr. Douglas B. Horan administers ultraviolet light treatment to a patient.



DISEASE CAN MAKE SUNSHINE DEADLY

Dr. Alan D. Andrews examines cells in his studies of the rare light-sensitivity disease xeroderma pigmentosum.

By the time Paul was 5 years old, his skin had gone through changes that usually occur over an entire lifetime. Besides the freckled, wrinkled, atrophied appearance of his skin, he had dilated blood vessels and several skin cancers. The cause: the rare genetic disease xeroderma pigmentosum.

The clinical abnormalities in xeroderma pigmentosum, one of the most severe of the light-sensitivity diseases, are a direct result of exposure to the sun. Sunlight damages DNA, the genetic material in all human cells. Normally, the body can repair DNA damage, but in persons with xeroderma pigmentosum, the damage is not repaired.

When a person whose system is normal goes into the sunlight and gets a slight sunburn, the damaged DNA in the skin is repaired within 24 to 36 hours after the sun exposure, according to PH assistant attending dermatologist Dr. Alan D. Andrews. In xeroderma pigmentosum's severe forms, no repair takes place and the victim retains all of the damage from the sun exposure.

At Columbia-Presbyterian Medical Center, dermatologists are studying this repair mechanism and its relationship to such major health problems as skin cancer and premature aging of the skin.

"The consequences of lacking an effective repair system also may show up as an increased rate of internal cancers," Dr. Andrews says.

"Skin cancer generally begins to appear by age 40. Thus, with most people, damage from sun exposure accumulates slowly over the years. In xeroderma pigmentosum, the effects of the sun damage show up in months," says Dr. Andrews. "If we can understand how this process works in xeroderma pigmentosum, we may be able to understand also how it works in normal individuals."

DEFECTIVE ENZYMES PREVENT CELL REPAIR

Xeroderma pigmentosum is characterized by inherited defects in enzymes that aid in repairing the damaged DNA.

The disease may affect several enzymes, but the chief defect occurs in an early step of what is called the excision repair system. In the repair process, part of the DNA that is damaged is cut, physically removed and replaced by a new segment of unaltered DNA, Dr. Andrews says.

"When patients are defective in the initial cutting step, the steps that normally follow can't occur. As a result, the damage remains and the cell can't function properly or divide," he says.

Researchers, however, have not been able to determine how this damage leads to skin cancer. "The defective DNA may cause the cancer. Or, the repair of the damage by alternative, mistake-prone repair systems may lead to mutations of the DNA, and hence, to cancer," says Dr. Andrews.

DISEASE CAN BE DEVASTATING WITHOUT EARLY DIAGNOSIS

"If xeroderma pigmentosum is not diagnosed early and properly managed, it can be devastating since skin cancers appear in the first or second decades of life. But, with treatment, many such persons may survive a normal lifespan," he explains.

"But it's an extremely limiting condition. In its severe forms, the patient must totally avoid sunlight. If he goes outdoors, he must completely cover up — including hat, gloves, long sleeves and leg coverings."

VICTIMS MUST STAY OUT OF SUNLIGHT

Dr. Andrews cites one case in which one young patient never went into the sunlight. As a result, the child never developed skin cancer. From the time the disease was diagnosed, the child was taken to school by car and was not allowed to play outside. Three of his older brothers who weren't diagnosed early have had many skin cancers.

Another infant who developed extensive freckling and pre-cancerous skin growths after her first summer of exposure to the sun was not diagnosed early and was not kept from the sun. By age 8, she developed skin cancer. When the youngster finally was diagnosed in her early teens, she had accumulated a large amount of sun damage, Dr. Andrews says. In addition, the child's family didn't follow the doctor's instructions to keep her out of the sun, and she went on to develop an unusually large number of skin cancers, including malignant melanomas, the most dangerous form of skin cancer.

Treatment for xeroderma pigmentosum mainly involves protection from the sun, and medical follow-up to remove any skin cancers.

At CPMC, researchers are engaged in one of the major laboratory efforts in the nation. In addition, dermatologists here have begun a registry to document current cases and apply the findings to help learn more about the disease by pooling information nationwide.

"Xeroderma pigmentosum is an extreme example of skin damage from sunlight," says Dr. Andrews. "For the sake of the patient — the quality and length of his life — early diagnosis is essential."

PORPHYRIA: THE PUZZLE OF THE WEREWOLF SOLVED

Dr. Maureen B. Poh-Fitzpatrick separates porphyrins from blood in her laboratory.

In medieval times, they were called werewolves: their skin was oddly colored and hairy. Their teeth were red. They were so sensitive to sunlight that they only ventured out at night. Today, there is a diagnosis for people with this condition: Erythropoietic Porphyria.

"Porphyria actually is the name of a group of diseases caused by defects in the way the body makes a blood and liver protein, heme," says Dr. Maureen B. Poh-Fitzpatrick, associate attending dermatologist at PH. "Since most of the porphyrias cause light sensitivity and skin disorders, the dermatologist is often the first to see the patient," she says.

DEFECTIVE ENZYME IS RESPONSIBLE

Somewhere along the biochemical pathway to heme is a defective enzyme. It's as if a step in a ladder were missing. The body progresses through each step in the heme pathway until it reaches the defective enzyme (the break in the ladder) and can go no further.

Although the body still can make heme, the heme pathway becomes less efficient because of the defective enzyme. The last step in the ladder that the body can reach easily is the production of a type of chemical called a porphyrin. When porphyrins build up, they migrate throughout the body and cause a host of problems. Porphyrins that turn up in the skin cause light sensitivity.

SKIN PROBLEMS ARE MOST OBVIOUS

"Most of these diseases are inherited," says Dr. Poh, "although there appears to be one type of porphyria which can be acquired. Because these diseases cause various chemical imbalances in the body, patients with different forms of porphyria may suffer from liver disease, anemia, seizures, hypertension and bizarre neurological disorders, although it is often

not clear why. Their light sensitivity may cause blisters, severe scarring, hair loss or excessive hair growth, swelling of the skin and blood vessel breakage."

"Each porphyria is caused by a different biochemical abnormality," says Dr. Leonard C. Harber, director of the Dermatology Service at PH. "We now have a much better understanding of how the enzymes affect the body's chemicals and how these chemicals affect people. It used to be that children with porphyria were hidden in closets. Now many of these children can lead normal lives."

PORPHYRIA IS RARE AND DIFFICULT TO DIAGNOSE

Dr. Poh says about 10 to 20 new patients with various forms of porphyria come here each year. "PH is one of the few places that does the sophisticated testing needed to diagnose these diseases. They often can be missed if the proper testing isn't done," says Dr. Poh.

Because each type of porphyria involves a different enzyme along the pathway to heme, treatment of each form is different.

"Although there is no type of porphyria which can be cured, in some cases, we can reduce the amount of porphyrin overproduction and alleviate some of the symptoms. In others, we can treat the photosensitivity problem," she says.

PATIENTS MUST AVOID ENVIRONMENTAL TRIGGERS

"Perhaps most importantly, in all cases, we can counsel the patient to avoid certain environmental triggers, like sunlight, certain drugs, hormones and alcohol, so they don't make their symptoms worse. If patients with some forms of porphyria don't know what to avoid, they could die," says Dr. Poh.

Several of the more common types of porphyria are treated here. "PH is the largest center in the United States for the treatment of certain types of porphyria," says Dr. Harber.

DISPOSING OF EXCESS IRON

Patients with Porphyria Cutanea Tarda have excess iron stored in their bodies. Excess iron makes the overproduction of porphyrins worse in this disease. The treatment for this type of porphyria calls for phlebotomy, or draining blood from the patient.

"We remove one pint of blood every three or four days," says Dr. Poh. "Over a three-week period, the patient loses five to six pints of blood. The body makes more blood to make up the loss, and uses up the excess iron so that the production of porphyrins is slowed down eventually," she adds.

PROBLEM CAN RECUR ANYTIME

Over the next several months after treatment, the patient's condition improves. Sometimes a patient remains healthy for years without further treatment. However, at any time, the problem can recur.

"It is essential that we make an accurate diagnosis before starting such an aggressive treatment, because it does not help patients with other forms of porphyria, and could be harmful," explains Dr. Poh.

For instance, other types of porphyria cause anemia, a lack of red blood cells in the body. Treating these types of porphyria by draining off even more red blood cells could make the patient worse.

The Hospital also treats patients with Protoporphyria. "We use a drug called beta-carotene, which contains a pigment found in carrots," says Dr. Poh.

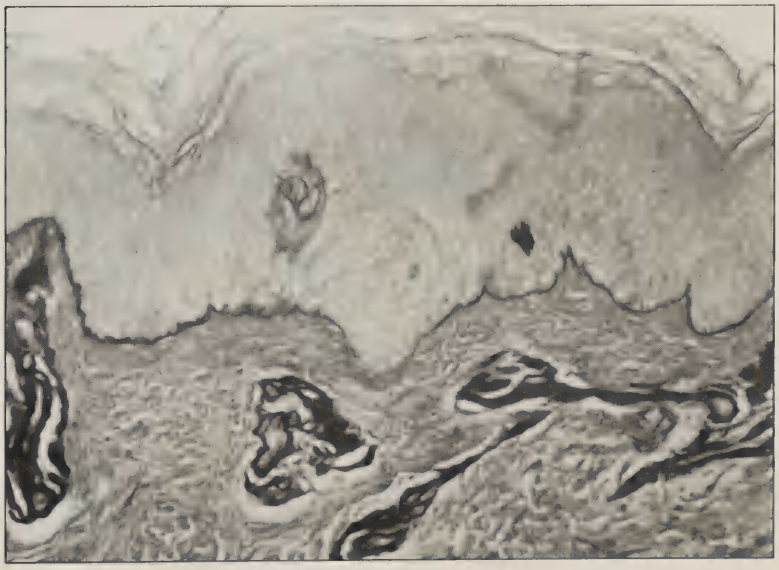
"The pigment is yellowish and it collects in the patient's skin, protecting him from the light. Although we only can treat the skin symptoms and not the cause of this disease, at least we help these patients look better and live more normal lives. Many even can get a tan while on this treatment," she says.

TREATMENT INVOLVES OTHER SPECIALTIES

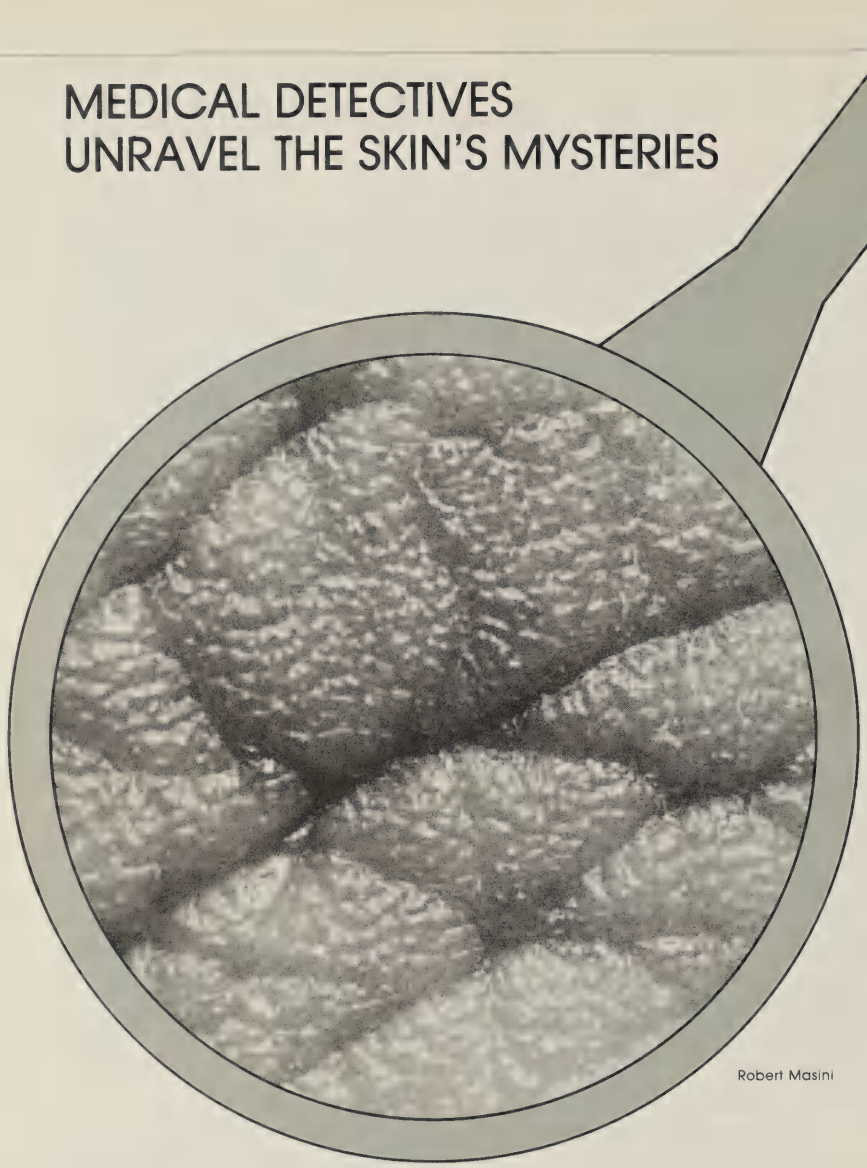
Treating porphyria often involves other specialties, such as the Pathology, Obstetrics/Gynecology and Medical Services. "We have been aided tremendously by these other specialties," says Dr. Harber. "Because certain types of porphyrias are aggravated by hormones, often a patient on hormones will have to use another medication," he says.

"At PH we can pull all the diverse aspects of these diseases together and render cutting-edge care with a team approach. That is one of the reasons why PH is one of the outstanding hospitals in the United States for the diagnosis and treatment of porphyrias. Dermatologists here also have assumed a leadership role in the last decade in developing treatments and diagnostic procedures in the porphyrias," Dr. Harber says. ■

A skin sample from a patient with porphyria shows enlarged blood vessels in the dermis portion of the skin.



MEDICAL DETECTIVES UNRAVEL THE SKIN'S MYSTERIES



Robert Masini

The human skin magnified approximately 30 times.

The problem can be as perplexing as the mysterious "Red Sweat epidemic" that afflicted stewardesses on flights from New York to Miami in 1980 or as mundane as skin problems from a bar of soap. Whenever a widespread skin problem arises, dermatologists at Columbia-Presbyterian Medical Center often are asked to step in and investigate.

"The light-sensitivity team of our dermatology group was one of the first to detect light sensitizers in household items, perfumes and soap, for instance," says Dr. Leonard C. Harber, director of the Dermatology Service at PH.

"Unfortunately, when things are going well, we don't hear from business, industry or consumer groups. But, when a problem occurs, industry tries to get it solved as quickly as possible, in response to consumer reaction. This is usually a request to discover the offending agent, how it is causing a light-sensitivity problem and how to prevent the disease and treat the patient. Ideally, industry would like an answer in 24 hours," he adds.

For example, Eastern Airlines called the Dermatology Service when the "Red Sweat" — little red drops which appeared on flight attendants' skin — erupted. Stewardesses were brought to PH for tests, but by the time they got to the Hospital, the redness had disappeared.

So another approach was attempted. Associate attending dermatologist Dr. Maureen Poh-Fitzpatrick was dispatched to LaGuardia Airport to board a flight to Miami to see if the "epidemic" could be caught in flight.

"During the flight, two stewardesses developed pinpoint bright red liquid droplets on their skin. I took them into the restroom to test them with a special light to detect any fluorescence in the skin, to test for the possible presence of porphyrins. Then, I blotted the liquid on their skin with filter paper for lab testing to see if blood was present. Both tests were negative, so we were able to reassure them that they were not sweating blood, or a porphyrin-containing substance."

HOW THE "RED SWEAT" WAS SOLVED

Meanwhile, another investigator noticed that there was a red stamp on demonstration life vests the stewardesses were using. Samples of the paint stamp and the red skin liquid were taken. An analysis showed that they were identical. Based on this finding, all of the red-stamped life vests were taken from the planes and the "epidemic" ceased.

An occurrence of something like the "Red Sweat" easily can trigger public fear although its cause was as simple as bits of paint.

While reactions to a bar of soap or suntan lotion may seem more mundane, such ingredients as antibacterial chemicals or a fragrance have caused serious problems in people who used some of these products and then went into the sun.

TRACKING DOWN THE CAUSE OF THE SKIN REACTION

One case involved a vacationer who used a different brand of soap while he was abroad and found that his skin erupted in a rash when he stepped into the sun. In another incident, a large group of people developed light-sensitivity reactions to a new sunscreen.

Medications also can cause a light reaction. One example is that of a young lawyer who took an antibiotic, went to the beach and got a sunburn so severe that his eyelids closed and his lips swelled to the point that he could not eat. He required hospitalization and cortisone treatment.

"Once an adverse reaction such as this occurs following use of a medication or a product, we ask what is happening, why is it happening and how can we prevent it? Then, we try to establish an experimental model by demonstrating the same disease or condition in a laboratory animal and, under controlled conditions, studying its effect on tissue cells and their components," explains Dr. Harber.

A NEW INVESTIGATION: THE HEALTH EFFECTS OF REDUCED OZONE

In addition to conducting clinical and basic science investigations jointly between PH and Columbia University's College of Physicians & Surgeons, where he is chairman of the Dermatology Department, Dr. Harber serves as president of the Society for Investigative Dermatology. Dr. Harber recently was named chairman of a National Academy of Sciences committee that is studying the health effects of a reduced layer of ozone in the atmosphere. This committee is under the aegis of the National Research Council.

"Congress has asked that it be advised by the committee as to how ozone is affected by such things as supersonic transport flights and atomic warfare testing," he says. "The 14 scientists on the committee are charged with compiling a document for potential legislative action."

LESS OZONE COULD LEAD TO INCREASED SKIN CANCER

Ozone absorbs ultraviolet light from the sun. If there were more ultraviolet light beaming down on the earth, an increased number of people probably would get skin cancer, crops could be damaged and also the plankton in the sea might undergo damaging changes, he says.

The atmosphere is 13 miles thick. If all of the ozone in the atmosphere were pressed together, it only would be one-tenth of an inch thick.

"Although very small, it offers great protection against ultraviolet light. Every few percentage points that the ozone concentration is changed can increase the number of skin cancers. Currently, there are nearly half a million cases reported a year and the number is increasing," says Dr. Harber.

14 SCIENTISTS STUDY THE OZONE QUESTION

The 14 scientists who are collecting data concerning the ozone question include experts from the fields of agriculture, meteorology, physical sciences and marine biology.

As they work together they will ask whether there has been a thinning in the ozone layer, and if so, what would be the effects of a further decrease?

Again, Dr. Harber has been called in to assess a light-sensitivity problem. He and the committee will determine if the problem can be prevented and what steps can be taken to minimize any damage from a decreased ozone layer. But this time, the issues may be even more far-ranging because they affect not only consumers, but also could influence most plants and animals on the planet from man down to the most microscopic part of the food chain. ■

Dr. Leonard C. Harber, director of the Dermatology Service at The Presbyterian Hospital.

PSORIASIS: ITS DISABLING EFFECTS CAN GO BEYOND THE SKIN

Theresa Fenwick, RN, assesses the progress of light-therapy treatment for patient Libby Bleaman.

The layers of normal skin can be compared to a cake with icing. The cake portion represents the growing cells below the surface, and the icing, the top layer. Now, imagine that the cake (or cells) begins growing at 12 times the normal rate. As the proliferating cells reach the surface, they break through the thin icing and harden. The icing becomes very thick and crusty as it builds up. This is similar to what happens in psoriasis.

Most people shed their top layer of skin and grow a new one every 36 days. In psoriasis victims, this process takes three days.

"We know more about what goes wrong after the red and scaly sores appear than we do about the cause of psoriasis," says Dr. Robert B. Armstrong, assistant attending dermatologist at The Presbyterian Hospital.

"One theory is that messenger hormones in the cells fall out of balance and stimulate the epidermal cells to reproduce at an above-normal rate."

Psoriasis is not an infectious disease. "Many people believe that it's contagious, but it's not. A person can get psoriasis even if no one in his family has had the disease. But, evidence also points to a genetic factor because the disease tends to run in families," says Dr. Robert R. Walther, director of Clinical Dermatology at PH.

PSORIASIS CAN STRIKE AT ANY AGE

Psoriasis can affect its victims at any age, although it seems to strike mostly in the 20s through middle age. Often, it results in changed lives. Some psoriasis victims are so disabled by the arthritis accompanying the disease that they are unable to work. Other sufferers become so distressed over their appearance that they avoid social events and people.

Of the 4 million to 6 million people who suffer from psoriasis in the United States, many never see a physician. They are able to keep the disease under control with over-the-counter medical preparations. In most cases, treatment consists of keeping the skin moist and applying cortical steroid medications. Other cases are so severe that they require hospitalization.

Patients hospitalized for psoriasis need more aggressive forms of therapy. One important treatment combines the use of tar preparations on the skin and ultraviolet light exposure. This treatment, developed 50 years ago, remains very effective. It usually requires a three-week hospital stay.

PSORIASIS MEDICATION AND THERAPY INVESTIGATION UNDER WAY HERE

"At Columbia-Presbyterian Medical Center, we are investigating the use of newer, more aesthetic preparations and the use of maintenance therapy to extend the length of remission," Dr. Walther says.

CPMC was one of the first medical centers in the country to contribute to the development of the third form of treatment: PUVA, or psoralens plus ultraviolet (A) therapy.

Psoralens are chemicals which, when stimulated by light, bind to the DNA in our skin cells. DNA is the genetic material in all human cells. When psoralens latch onto DNA, the cells cannot divide.

"The psoralen molecule acts like a pair of handcuffs. After light hits the psoralen, it locks onto the two hands

of the gene. If the light doesn't strike the psoralen, the handcuffs can't lock and the chemical floats out, without affecting the genetic material," says Dr. Armstrong.

PUVA THERAPY CAN HELP CONTROL PSORIASIS

A series of treatments is necessary to slow down psoriasis. With PUVA therapy, about 25 to 30 treatments can control the disease. PUVA is convenient for patients because it is done on an outpatient basis and it's not as messy as coal tar preparations.

PUVA, however, is a new treatment and the patient runs the risk of developing cataracts, getting an increased number of skin cancers and possibly even malignant melanomas, the most serious, and often fatal, form of skin cancer.

"Many of the ideal agents that have been used in psoriasis treatment have included medications used in treating tumors," says Dr. Leonard C. Harber, director of the Dermatology Service. "There is a negative aspect of this therapy. Although it slows down the multiplication rate of the skin cells, it also affects other rapidly multiplying cells such as the bone marrow and cells lining the stomach."

The cancer drug methotrexate also is effective in controlling psoriasis because it reduces the rate of epidermal cell turnover. However, the side effects from continued use of this medication can be severe, Dr. Walther cautions: "Indeed, hair loss and ulcers may occur."

EFFORTS HERE YIELD MORE THERAPEUTIC TREATMENT

"Our recent efforts have included the development of safer and more therapeutic methods of treatment. We stress studies of the effects of ultraviolet and visible light on our patients and in our research efforts. We also are developing new types of medication that react with light for use in psoriasis therapy," says Dr. Harber.

The Medical Center is one of a group of select institutions that is collaborating on studies of new drugs for psoriasis.

PH has one of the largest groups of psoriatic in- and outpatients in the United States. There are 300 admissions a year, and a total of 15,000 outpatient visits a year.

The newest and most advanced facilities and equipment are available at the Hospital. A unique Ambulatory Psoriasis Treatment Center provides light-therapy treatment to seriously ill psoriasis victims on a 9-to-5 basis, so that they do not have to be hospitalized overnight during the final week of their three-week treatment program. Dermatologists here have shown that treatment in the center is just as effective as overnight hospitalization, and that patients prefer it because it is less disruptive and less expensive.

Because PH has the largest psoriasis caseload in the nation, "It is a well-known referral center. Although we often see the most severe or worst cases, we're able to help the overwhelming majority of patients with psoriasis," says Dr. Harber.

ARTHRITIS CRIPPLES A SMALL GROUP OF PSORIASIS VICTIMS

Some of the most severely disabled patients have a combination of arthritis and psoriasis. About 14 percent of all psoriasis patients hospitalized at PH for their skin problem develop arthritis that can be both painful and crippling.

"Psoriatic arthritis has a preference for the small bones of the hands and feet and occasionally, the spine, knees and ankles," says Dr. Armstrong.

"We don't know why only a small number of patients with psoriasis develop arthritis. The changes that occur in the skin are not the same changes that occur when the joint becomes inflamed in arthritis."■

VITILIGO: A CASE OF DISAPPEARING SKIN COLOR

One skin cell in every 36 controls a person's skin color. These cells, which produce pigment in the upper layer of the skin, are melanocytes. When they stop working, the skin color disappears in the affected areas, a condition called vitiligo.

"Vitiligo is a cosmetic disease," says Dr. Vincent A. DeLeo, assistant attending dermatologist at The Presbyterian Hospital. "But it can be psychologically devastating in dark-skinned individuals. Usually, vitiligo is localized and patches of skin around the body lose their color."

Dermatologists don't know what causes vitiligo. In some cases, they feel that it may be inherited or associated with internal diseases, such as endocrine abnormalities. Vitiligo has been known to form along the path of a nerve. In other cases, the disease occurs randomly.

TREATMENT TAKES THE LEAD FROM THE ANCIENT EGYPTIANS

Today's treatment for vitiligo is adapted from the ancient Egyptians who were the first to discover that chemicals called psoralens influence the amount of pigmentation in the skin. Psoralens occur naturally in parsnips, wild carrots, fig leaves and limes and react with light to stimulate pigment production. As early as 1,000 B.C., they brewed a psoralen-rich tea and went into the sunlight to restore skin color.

In the 3,000 years doctors have had to refine the process, synthetic psoralens have been developed. Patients are given psoralens and then are placed under ultraviolet lights to encourage the repigmentation of skin. This treatment is called PUVA, an acronym for psoralens plus ultraviolet light. The Hospital is a leader in PUVA treatment for vitiligo in New York City.

The treatment stimulates live melanocytes in the skin to produce pigment. Gradually, color returns to the skin. The color begins as a freckled appearance. Then the freckles migrate and merge, causing uniform pigmentation.■

LEUKEMIA DRUG SWITCHED ON BY LIGHT

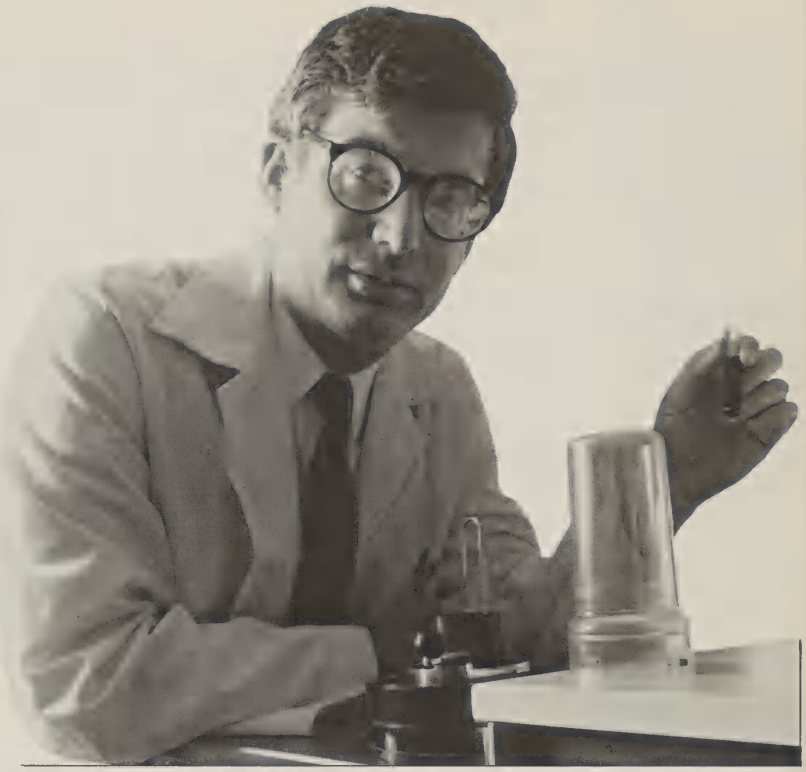
A cross between a 3,000-year-old skin treatment and a dose of modern technology soon may brighten the outlook for victims of a deadly form of cancer called cutaneous T-cell leukemia.

The ancient Egyptians discovered that teas made of wild carrots and fig leaves relieved some skin maladies. Unbeknownst to the ancients, the active ingredients in these potions were psoralens, a group of chemicals which become active only when exposed to light. An Egyptian with a case of vitiligo (see story on page 11) or psoriasis (see story on page 10) might find relief by drinking a bit of psoralen-rich brew, and then spending some time in the sun.

One kind of psoralen, called 8-methoxypsoralen also does a particularly good job of destroying some leukemia cells, according to Dr. Richard L. Edelson, associate director of the Dermatologic Research Laboratories at the Columbia-Presbyterian Medical Center. Leukemia patients have abnormal types and amounts of white blood cells, which accumulate rapidly and invade many healthy tissues and organs. But, since these cells circulate through the blood stream in darkness, a dose of this drug simply would float along with them through the body, useless and inactive. Dr. Edelson developed a technique, called extracorporeal photopheresis, which not only overcomes this situation, but takes advantage of it.

Many forms of chemotherapy require that a cancer patient's body be bathed internally in potent toxins. Ideally, the drugs should zero in on cancer cells, and leave the normal cells around them alone. Unfortunately, cancer drugs often destroy both, and produce an array of harmful side effects.

Because psoralens work only when exposed to light, Dr. Edelson has devised a way to "switch them on" outside the body, away from most other cells. After giving the drug to a leukemia patient, Dr. Edelson passes the patient's blood through an apheresis machine, which draws off two of its parts: the psoralen-carrying plasma and the cancerous white blood cells. The rest of the patient's blood is returned.



Peter Kaplan

Dr. Richard L. Edelson has developed a treatment that may improve the outlook for some leukemia victims.

DRUG INACTIVATES CELLS WHEN HIT BY LIGHT

Some of the white blood cells are normal and necessary for the body to function, so Dr. Edelson simply cannot draw them off with the cancerous ones and discard them. However, he does deplete some white blood cells, and then combines what is left with the psoralen-rich plasma. This combination then is exposed to ultraviolet light. The light "turns on" the psoralen drug, which binds to the harmful white blood cells and inactivates them. The blood then is returned to the patient. Because the psoralen no longer is exposed to ultraviolet light, it cannot damage any other cells. Ultimately, the psoralen is excreted.

This new treatment only has been used on a few patients, all of whom were almost totally disabled by leukemia, Dr. Edelson says. Since undergoing the treatment, most of the patients have returned to functional lives.

Tests showed that, before treatment, more than half of their white blood cells were malignant. After four months of therapy, the number of malignant cells was cut by 70 to 90 percent.

TREATMENT IMPROVES QUALITY OF LIFE

"We only have been treating these patients for about a year and a half, so it is impossible to say whether the therapy will increase their longevity, although that is a reasonable expectation. Even if it doesn't increase their life spans, it already has tremendously improved their quality of life," says Dr. Edelson.

The treatment remains in a developmental stage and is not a cure, Dr. Edelson says. It won't be available for general use for at least two years, he adds, and even then, it will be used in conjunction with other therapies for leukemic diseases.

ONCE-ELUSIVE CANCER NOW TREATABLE

Just a decade ago, dermatologists didn't realize that many skin problems they encountered might be the most common type of adult cancer of the lymph system: Cutaneous T-cell Lymphoma (CTCL).

Dr. Richard L. Edelson, associate attending dermatologist and director of the Dermatologic Research Laboratories at Columbia-Presbyterian Medical Center, says "Because the skin symptoms of this disease are so varied, CTCL often was mistaken for psoriasis, an allergic reaction or other diseases. The skin ulcers, tumors and infections caused by CTCL were artificially splintered into many diseases.

"At CPMC," says Dr. Edelson, "we helped define the disease and suggested the name adopted by the National Institutes of Health — Cutaneous T-cell Lymphoma. Cutaneous refers to skin. T-cell is the type of cell that is affected. Lymphoma denotes that we're talking about a cancer of the lymphatic system."

Normally, the T-cell, which is part of the body's immune system, appears in the skin in small quantities. In the early stages of CTCL, abnormal T-cells appear in the skin, causing a rash or ulcer. As the disease progresses, the number of malignant T-cells in the skin increases, and they eventually begin infiltrating the blood and internal organs.

DIAGNOSIS DEPENDS ON EARLY DETECTION

CTCL is as dangerous as many other types of lymphoma, says Dr. Edelson, who adds that diagnosing the disease depends on detecting these abnormal T-cells early.

Once the disease spreads into the blood, the patient must undergo chemotherapy, and his chances of survival decrease. But until recently, it was impossible to detect the small number of abnormal T-cells in the skin that mark the beginning stages of the disease. By the time there were enough abnormal cells to detect the disease by viewing a skin sample under the microscope, the average survival time would be only five years.

In the '80s, it became possible to identify small numbers of T-cells in the skin. Working with immunologist Dr. Carole Berger, Dr. Edelson developed a diagnostic method which now is being used worldwide. This work also made it clear that people with different symptoms had something in common: an accumulation of malignant T-cells in the skin.

SENSITIVE TEST IDENTIFIES SMALL NUMBERS OF ABNORMALITIES

The test makes it possible to differentiate the lymphoma from the myriad of problems that affect the skin. It works by recognizing abnormal markers found on malignant cells.

Each person has a distinct chemical code on his cells. Just as fingerprints differ from person to person, the code on one's cells is unique. This allows a person's body to differentiate his cells from foreign cells, such as bacteria. The immune system works as the body's security system to keep intruders out.

Substances called antibodies are the policemen. They float through the blood, look for foreign substances such as bacteria, and destroy them. Each antibody recognizes only one kind of foreign cell. For every bacterium to which a person is exposed, the body develops a specific antibody that can find and destroy it.

A COPY OF THE BODY'S SECURITY SYSTEM

Dr. Berger has copied the body's security system by creating special mouse antibodies which recognize CTCL cells. The mouse antibodies can tell the difference between normal T-cells and abnormal ones, even when only a few abnormal T-cells are present.

Dr. Berger mixes a skin or blood sample with the mouse antibodies. If there are any abnormal T-cells in the sample, the mouse antibodies will recognize them and attach to their surfaces.

In order to detect the mouse antibodies, Dr. Berger uses another antibody from rabbits that recognizes the mouse antibody. If any mouse antibodies are present, the rabbit antibodies will latch on to them.

LIGHT-EMITTING CHEMICALS HELP IN THE DETECTION PROCESS

Then she must be able to detect the rabbit antibodies. To do this, she uses rabbit antibodies that are tagged with a light-emitting chemical called fluorescein. Using a device called a cytofluorograph, Dr. Berger can detect any light emitted from the fluorescein. If the cytofluorograph picks up any light, she knows that the rabbit antibodies are present, and that they are attached to a chain of antibodies at the bottom of which is an abnormal T-cell.

Dr. Alison Estabrook, at left, assists immunologist Dr. Carole Berger in a laboratory study.

"The mouse antibodies detect abnormalities in both the skin and blood much sooner in the course of the disease, so we know how to treat the patient," says Dr. Berger. If the disease is confined to the skin, it can be treated with medication and light therapy or skin ointments.

The test can be used to detect the disease in its later stages, when it has progressed into the blood, but more importantly, says Dr. Edelson, "we have developed a way to diagnose CTCL early on when it still can be eradicated. CPMC has made a major contribution to the medical world's understanding of CTCL."■

PH NURSE PROMOTES DERMATOLOGY EDUCATION

Jeannette Anders, RN at The Presbyterian Hospital, recalls having been exposed to about two hours of dermatology in nursing school. When she entered the specialty, she found that dermatology nursing was not recognized as an area of expertise. While continuing education about new techniques and treatments was constantly available for doctors, dermatology nurses had no similar opportunity.

But that has changed. Ms. Anders has helped found the newly formed Dermatology Nurses' Association, and serves as chairman of the organization's steering committee.

"After beginning work in dermatology here, I knew I needed specialized education. At that time, there were few educational programs in dermatology. A year after completing a course on the West Coast, Eileen Enny Leach, an RN at PH, and I drew up a course design and offered a two-day program on dermatology nursing."

The course drew a standing room only crowd for that first program. With the continuing support of the Dermatology Service, yearly courses were offered.

"Here at PH, we emphasize the treatment of psoriasis and light-sensitivity diseases. Other centers may focus on other diseases. It's important for nurses to exchange ideas. One nurse may be an expert in psoriasis care, but may want to learn more about acne. We've tried to provide nurses with education in these areas," she adds.

NURSING STAFF CONDUCTS MOST PATIENT EDUCATION

"A major role in dermatology nursing is patient education. Patients with chronic skin diseases need psychological support and 'hands-on' nursing."

The association has enrolled 325 members nationwide since its inception in September 1982. The group focuses on an exchange of nursing care information in a bimonthly newsletter and offers continuing education courses.

Ms. Anders also has been involved in patient education at the Hospital. With the dermatology nursing staff, she is compiling a patient education booklet which will be used with the film "Psoriasis Therapy" on PH TV Channel 3.

PH TV FILM SHOWS PSORIASIS PATIENTS THE TREATMENT THEY'LL RECEIVE

This film, written by Dr. Robert B. Armstrong, Dr. Robert R. Walther and Mrs. Leach of the Dermatology Service, shows patients how psoriasis treatment is conducted at PH.

"Psoriasis Therapy" for patients and a second film, "Psoriasis: Concepts of Pathophysiology, Diagnosis and Therapy" for medical students, residents and nurses, were prepared by the Audio-Visual Service at the Columbia University College of Physicians & Surgeons.

"Because PH is a major referral center, we see chronic forms of dermatologic conditions and it requires a certain degree of expertise to care for these patients and give them the support they need," says Ms. Anders.

For this reason, she adds, continuing education and specialization in dermatology nursing is needed to inform nurses about new techniques and therapies in dermatology.

Jeannette Anders, RN, reads the latest issue of the Dermatology Nurses' Association newsletter.

DERMATOLOGISTS DIAGNOSE THE RECENT RASH OF HERPES

The herpes virus comes in many forms — from chickenpox to cold sores — but it is best known today as a sexually transmitted disease. Because its symptoms, as well as the secondary symptoms of other serious venereal diseases appear on the skin, very often a dermatologist is the first doctor to make a diagnosis.

Herpes simplex Type I appears as cold sores or fever blisters. "Studies show that 80 to 90 percent of the people with this virus acquire it as children or adolescents," says Dr. Robert B. Armstrong, assistant attending dermatologist at The Presbyterian Hospital.

The other variety of the herpes simplex virus — Type II — may be associated with venereally transmitted disease. "Anywhere from 3½ million to 35 million Americans have this disease," he says.

Both types of herpes can be spread by skin-to-skin contact. Herpes is characterized by groups of fluid-filled blisters, which often are painful. The blisters eventually pop and scabs form. The healing process generally takes about two weeks.

"Once the area has healed, the skin's appearance returns to normal, but the virus lives on in the nerves, where it cannot be detected directly.

"The virus never may become active again, except to remain in the nervous system in a dormant stage. In some people, the virus travels back down the nerve to the skin where it first entered the body and produces small groups of blisters that heal in one week to 10 days," says Dr. Armstrong.

THERE IS NO CURE FOR HERPES

Antibiotics are ineffective against viruses. "There is no cure for herpes, not even an effective treatment. The disease usually just runs its natural course," the dermatologist says.

"While the virus hides inside a nerve, it is protected by the nerve's outer membrane from the body's immune system. Antibiotics can't touch them."

Herpes is most contagious when the blisters are present and filled with fluid. Once healing takes place, and in between infectious bouts, doctors believe that the virus will not spread.

A new drug called Acyclovir has helped to reduce the severity of the blisters and to help them heal. But there is no evidence that it prevents recurrence of the disease. Meantime, researchers are trying to find a safe and effective vaccine.

"It's difficult to say whether there actually is a herpes epidemic. It may just be that more people have a heightened awareness of the disease and are seeking treatment," says Dr. Armstrong.

"However, most people with herpes Type I or II can live a completely normal life by taking minor precautions when the infection erupts."

ACNE: MORE THAN A TEEN-AGE SCOURGE

Acne, the scourge of the teen-age years, is something that many of its adolescent sufferers expect to disappear by age 21. But often, it doesn't. This annoying skin condition can linger well into their 30s.

"We don't know what causes acne. Patients with acne generally have larger and more active oil glands, but that's not an iron-clad rule," says Dr. Alan D. Andrews, assistant attending dermatologist at The Presbyterian Hospital.

Hormones play an important role in acne, particularly the male hormones, which are the only chemicals in the body that directly affect the activity of the oil glands. "This explains why men tend to have more severe acne than women. It's not the amount of hormone, per se, but the sensitivity of the oil glands to the hormones," says Dr. Andrews.

OIL GLANDS GROW LARGE AND ACTIVE

Before the onset of puberty, a person's oil glands are small and quiescent. After puberty, they become large and active.

The skin forms its outer dead cell layer near the oil gland openings. Sometimes, an unknown abnormality in this area can cause the passages that lead to the openings to become clogged with oil and dead cells. The oil builds up behind the narrowing gland opening. If the buildup is large enough, it can rupture the wall of the oil gland, resulting in a pimple.

"There is no scientific evidence that diet plays a role in acne," the dermatologist says. "So, eliminating chocolate, milk and ice cream from your diet to avoid acne won't do any good."

Bacteria on the skin can contribute to the inflammation that accompanies acne. This is why antibiotics are effective in acne treatment, says Dr. Andrews.

A CURE FOR ACNE ELUDES PHYSICIANS

Still, there is no cure for acne. Astringents, vitamin A therapy, antibiotics and the opening and draining of cysts to remove the accumulated material can be used to manage and control acne.

"The common form of acne usually subsides by the time a patient reaches his 30s. However, another type of acne, known as acne rosacea, usually begins in the mid-30s. Its symptoms are inflamed red bumps on the nose and cheeks as well as dilated blood vessels," he says.

LITTLE KNOWN ABOUT ACNE ROSACEA

Sun exposure, alcohol and hot drinks can aggravate the condition in some people. Antibiotics and anti-inflammatory drugs are used to help control acne rosacea.

"Doctors know less about what causes acne rosacea than they do about the common form of acne," says Dr. Andrews. "However, we have developed effective methods of treatment that can help to control or minimize the damage."

Acne affects about 75 percent of the population in varying degrees of severity. Research has yielded a new medicine made from an artificially modified form of vitamin A which seems to have long-lasting effects, he says. However, the drug only has been approved for use in severe cases because it produces a large number of side effects. Meantime, those who have only occasional acne breakouts must use the older methods of control until the condition runs its natural course.

PH TRUSTEES ELECT NEW BOARD MEMBER

Mr. Philip L. Smith was named a member of The Presbyterian Hospital's Board of Trustees on June 15. Mr. Smith is president, chief operating officer and a director of the General Foods Corporation. He serves as a trustee of Engenics and the Whirlpool Corporation. Mr. Smith holds bachelor's and master's degrees in business administration from the University of Michigan. He also was a captain in the U.S. Marine Corps, where he served as an aviator.

"With Mr. Smith's business expertise and management skills, he is a tremendous asset to the Hospital," says Dr. Felix E. Demartini, president of The Presbyterian Hospital. "We welcome him to the Board of Trustees." ■

Mr. Philip L. Smith

DR. ALEXANDER GARCIA RETIRES FROM ORTHOPEDIC SURGERY SERVICE

Dr. Garcia, at left, greets Dr. Harold M. Dick, center, and Dr. Frank E. Stinchfield.

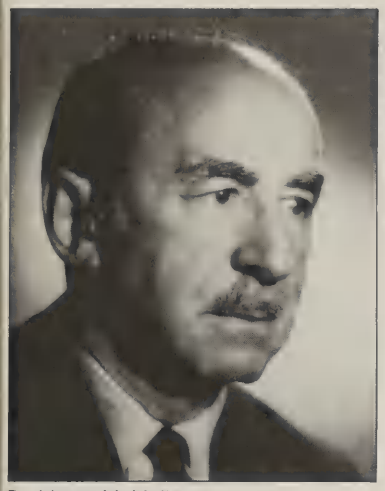
Dr. Alexander Garcia retired as director of the Orthopedic Surgery Service at The Presbyterian Hospital on May 1. Dr. Harold M. Dick, who previously served as chief of the Pediatric Section of the Orthopedic Surgery Service, has been named acting director and chairman of the Department. Dr. John R. Denton has been named chief of the Pediatric Orthopedic Service.

Dr. Garcia has been a member of the PH staff since beginning his orthopedic surgery residency here in 1948. He was named chief of the Orthopedic Clinics at the Vanderbilt Clinics in 1968, and held that position until 1976, when he was appointed acting director of the Orthopedic Surgery Service. At that time, he also was named vice president of the Hospital's Medical Board. Dr. Garcia became Medical Board president in July 1979, a post he held through July 1982.

Dr. Garcia was named director of the PH Orthopedic Surgery Service in November 1977. In January 1978, he became the Frank E. Stinchfield Professor and Chairman of the Department of Orthopedic Surgery at the Columbia University College of Physicians & Surgeons.

Dr. Garcia is a member of the American Academy of Orthopedic Surgeons, the Association of Bone and Joint Surgeons and the American Orthopedic Association. He is editor-in-chief of *Orthopedic Review* and serves on the editorial board of *Emergency Medicine*.

During a party in his honor at the Faculty Center on April 14, Dr. Garcia told *Stethoscope*, "I never could have had a more rewarding professional career than here at the Medical Center." ■



Dr. Meyer M. Melicow

DR. MEYER MELICOW DIES AT 88

Dr. Meyer M. Melicow, Given Professor Emeritus of Uropathology Research at the Columbia University College of Physicians & Surgeons and urologist at The Presbyterian Hospital, died on June 3.

A 1920 graduate of P & S, Dr. Melicow is known as the "father" of uropathology. He was the first to describe specific features of several urological cancers which are important for selecting the correct treatment. He completed his residency at PH in 1923 and went on to help found the Squier Urological Clinic here. Dr. Melicow was the clinic's first pathologist when the Medical Center opened in 1928.

During his distinguished career, Dr. Melicow was the recipient of such honors as the Hecktoen Gold Medal of the American Medical Association, the Lattimer Medal of the American Urological Association, the Valentine Medal of the New York Academy of Medicine, the Townsend Harris Medal of the City College of New York, the Burpeau Medal of the New Jersey Academy of Medicine and the Gold Medal of the Columbia Medical Alumni — the alumni's highest honor.

Dr. Melicow also was a skilled artist, and won more than 60 awards at various art shows.

Dr. Melicow is survived by his wife, Sylvia, a son, two sisters and three grandchildren. ■

FOOTNOTES

MEDICINE: **Dr. Robert M. Glickman**, director of the Department of Medicine at The Presbyterian Hospital, was chosen president-elect of the American Society of Clinical Investigation for 1984-85. The society is an organization of physicians engaged in medical research. ASCI members are selected from the most outstanding physician-scientists in the United States. As president-elect, Dr. Glickman will address the issues of biomedical research by physicians. Dr. Glickman will begin his presidency in April 1984.

Dr. Harold C. Neu, chief of the Division of Infectious Diseases and Hospital epidemiologist, served as a guest lecturer before the Infectious Diseases Association of Thailand recently in Bangkok. Dr. Neu discussed the "Role of Third Generation Cephalosporins in Critically Ill Patients."

Dr. Arthur Bank, chief of the Division of Hematology in the Department of Medicine, delivered a lecture on the "Genetics of Thalassemia" to the Swiss Society of Hematology in Lucerne, Switzerland in May.

LEGAL AFFAIRS: **Mira Weiss, Esq.,** Hospital attorney, was a panelist on "In House Counsel" at the recent National Health Lawyers' Association 1983 Health Law Update in Chicago.

NASA scientist-astronaut Dr. F. Story Musgrave, at right, chats with Dr. Robert M. Glickman, director of the Department of Medicine at PH, before presenting a guest lecture on "Medical, Physiological and Psychological Aspects of Extra-Vehicular Space Activities" during Team Rounds in June. Dr. Musgrave is a 1964 graduate of the Columbia University College of Physicians & Surgeons.

OPHTHALMOLOGY: **Dr. George Howard**, associate attending ophthalmologist, recently lectured before the New England Ophthalmological Society on "Diagnosis and Treatment of Arteriovenous Malformations of the Orbit."

SURGERY: **Dr. Mary H. McGrath**, of the Division of Plastic and Reconstructive Surgery, has been appointed consultant to the Food and Drug Administration's Surgical and Rehabilitation Devices Panel. The panel reviews the safety and effectiveness of surgical devices and advises the FDA on the classification of these devices into regulatory categories for clinical use.

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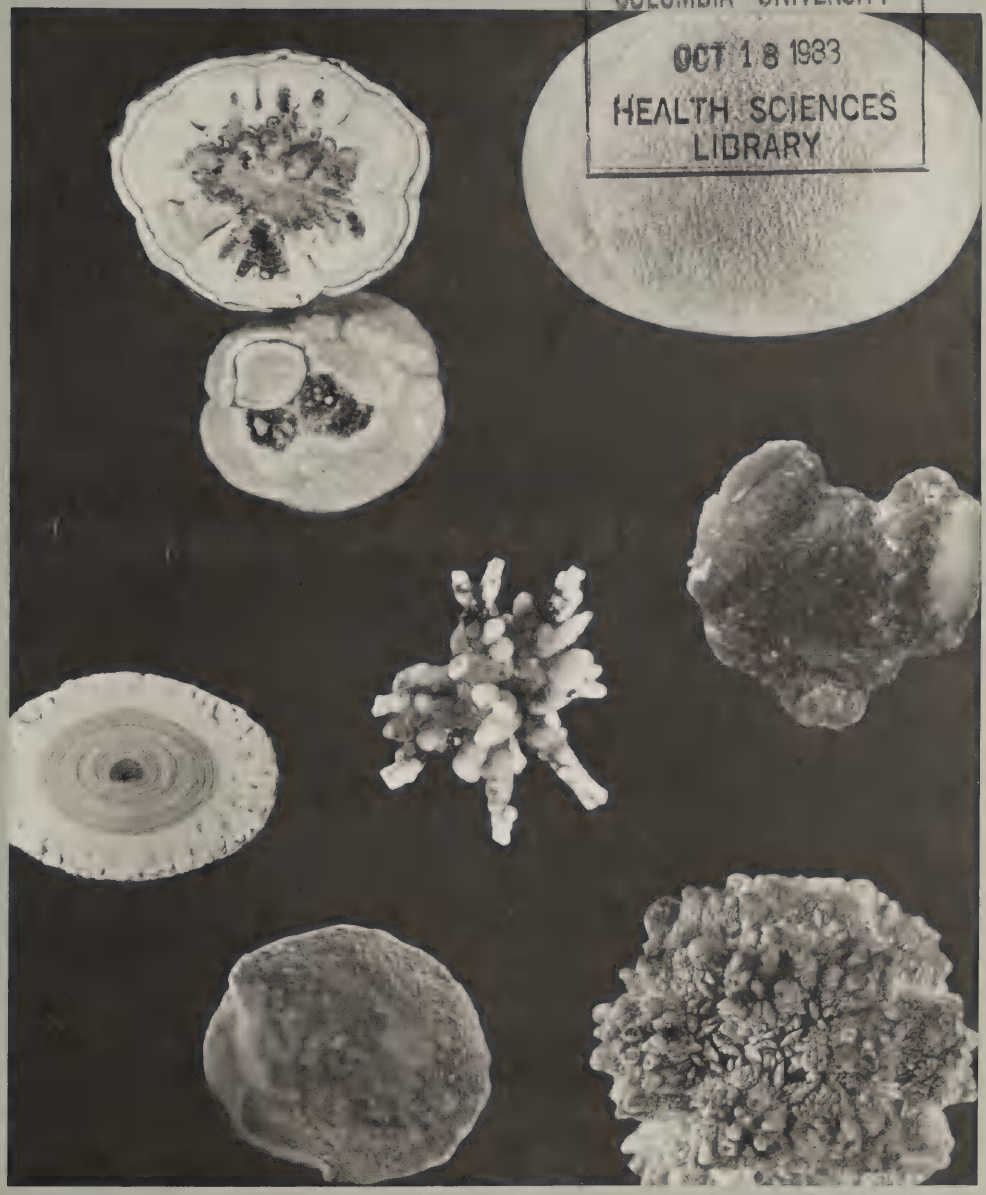

UROLOGY: THE SCOPE WIDENS **SEPTEMBER 1983**

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IMPORTANT NOTICE TO OUR READERS

You are invited to participate in The Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity, unitrust life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information, call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

ABOUT THE COVER

Bladder stones from the collection of Dr. John K. Lattimer, former director of the Urology Service at The Presbyterian Hospital.

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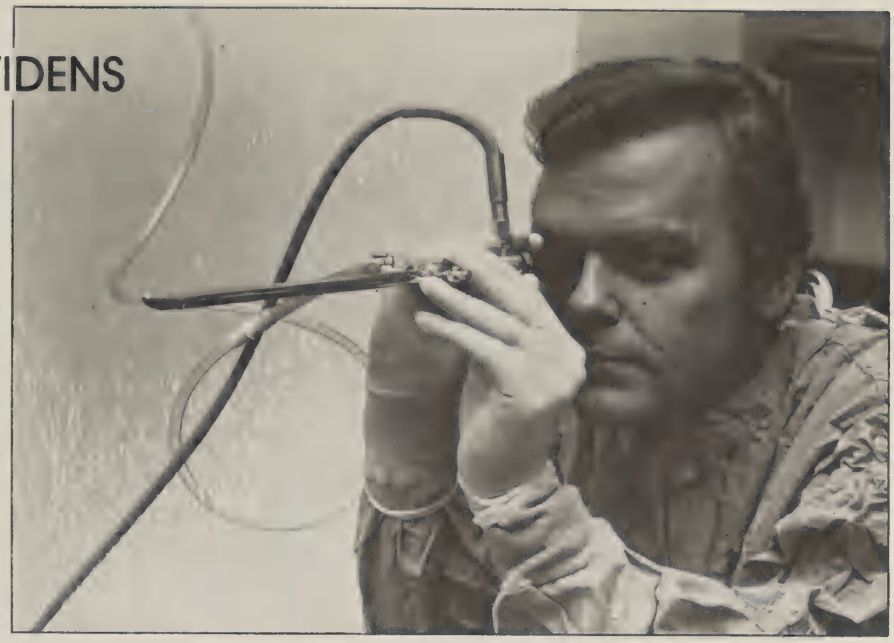
UROLOGY: THE SCOPE WIDENS



Steve Peterson, clinical coordinator of the Cystoscopy Suite, prepares a cystoscope for a urologist who will use it to peer into a patient's bladder.

Traditional use of the word urology summons thoughts of disorders of the kidneys, bladder and prostate gland. Indeed, these organs are the urologist's province, but major advances in diagnostic and therapeutic techniques have broadened the scope of this field.

At The Presbyterian Hospital, advances in medical and surgical techniques have enabled urologists to create and replace essential parts of the urinary system.

In addition to building new bladders and ureters, urologists have been able to salvage organs as well.

PRECIOUS KIDNEYS ONCE WERE REMOVED AND DISCARDED

Not too long ago, if a patient had a kidney tumor, doctors would remove the entire kidney. A patient who had only one kidney, or whose kidneys were tumor-ridden, found that he faced a lifetime on a dialysis machine following removal of his kidneys.

So urologists developed techniques that enabled them to remove only that part of the kidney in which the tumor was present. In these cases, the remaining portion of the kidney — perhaps only one-third of the original organ — would be sufficient to preserve a normal life style.

Urologists studying such diseases as high blood pressure have traced hypertension's roots, in certain cases, to abnormalities in the kidneys or the blood vessels supplying them. With this knowledge, urologists have developed surgical techniques to restore blood pressure to normal while preserving kidney function.

KIDNEY STONES REMOVED WITHOUT SURGERY

Kidney stones now can be prevented by medical treatment. When a stone must be removed, it can be done without surgery by smashing it with ultra-high frequency sound waves aimed at the stone and then flushing out the grains.

Bladder disorders, such as incontinence, may require the expertise of neurourologists. Their special training in urodynamics — the study of urinary flow, including the causes of certain bladder problems — and the development of artificial control valve muscles have enabled urologists to deal with conditions which once were thought to be incurable. The results have allowed patients to return to normal life styles.

INFERTILITY ALSO FALLS UNDER THE UROLOGIST'S DOMAIN

Such disorders as infertility and impotence, once thought to be either psychological or the consequences of aging, never were given the scientific study they needed until urologists developed them into subspecialties.

Advances in the diagnosis and treatment of urological disorders in children have led to the development of pediatric urology as a subspecialty. Similar progress in cancer treatment has led to the evolution of the urological cancer specialist.

A cross-section of the bladder.

Michael Reingold

SURGEONS BUILD A BLADDER FROM THE BOWEL

When a patient has a serious bladder disorder or has undergone bladder removal, it often means being tethered to a urine bag on the abdomen for the rest of his life.

Many patients no longer face that prospect. Now urologists at The Presbyterian Hospital can reconstruct bladders fashioned from segments of the patients' own bowel. In addition, they can connect bladder openings where they belong, instead of creating a stoma, or abdominal opening, to drain urine.

"We are the first hospital in the world to reconstruct a working bladder which holds urine like a normal bladder and place it in the normal anatomic location," says Dr. Carl Olsson, director of the Urology Service at PH.

Previously, surgeons in Sweden were able to construct such bladders, but they led to a specially created stoma.

By taking about two feet of bowel from a patient, urologic surgeons are able to create a sizeable reservoir for the storage of urine.

The section of bowel, which is shaped like a bicycle inner tube, is split open. "During surgery, we keep spreading the section of bowel and flattening it out from its tubular shape. Then, we sew and staple each section together until we create a sphere. In a way, it's sewn together like a patchwork quilt. When we're finished, we end up with a large reservoir," says Dr. Olsson.

SPECIAL VALVES PREVENT LEAKAGE OF URINE

After the bladder is created, a portion of bowel remains at both ends. Surgeons turn these sections into control valves that keep the bladder watertight and prevent regurgitation of urine back to the kidneys.

"The person with a normal bladder has a valve on top of the reservoir so that urine doesn't go back into the kidney. He also has a 'control valve muscle,' or a sphincter, at the bottom to prevent the involuntary release of urine. Our patients may have neither of these, so we have to create them," explains Dr. Olsson.

When some patients with bladder disease or a congenital disorder have a remnant of a control mechanism, physicians can use this in fashioning a new bladder.

"No one likes to wear a urine bag, and for some, it would be particularly debilitating. So potentially, this technique could be a boon, especially for people with active life styles," Dr. Olsson adds.

NEWLY CREATED URETHRA ENSURES NORMAL URINE FLOW

In the reconstruction procedure, a urethra also is created to establish normal urine flow.

The ileum, or lower portion of the bowel, is used as the material for the bladder because there's plenty available and there's no indication that its removal will harm the patient.

However, because the bowel's original job was to absorb materials during the digestion process, an ileal bladder cannot be used on all patients, says Dr. Olsson.

MUST CORRECT URINE RESORPTION BY BLADDER TISSUE

If a person has normally functioning kidneys, then the kidneys clear the blood of any impurities. The bladders that Dr. Olsson and his staff construct absorb some of these products, which then go back into the blood. Then the kidneys excrete them again. Generally, any problem can be corrected with medication or more frequent emptying of the bladder. "But we have to be careful not to overload the system with recycled waste products," he explains.

The Urology director says that the ability to liberate some patients from urine bags may open a new horizon in urologic patient care.

"In other patients, we have to start from scratch. The procedure available here can be done whether any type of urinary system remains or not," says Dr. Olsson. "We can replace the entire urinary system south of the kidney." ■

RECONSTRUCTION SURGERY CREATES A NEW PATH FROM THE KIDNEYS AND A NEW LIFE

A new world opened for Michael McGinley when he was 7 years old. He had entered the first grade a quiet child, friendly, but wary of playing with his classmates — he feared that the odor of urine would give away the secret that he wore a bag attached to his skin.

By the end of the year, Michael no longer had a secret. After a lifetime of wearing a urine bag, he underwent surgery at the Babies Hospital division of The Presbyterian Hospital to repair his urinary tract and allow him to join his friends on the playground.

Urinary tract defects affect one out of every 1,000 infants born in the United States each year. Michael, who was born with a severe curvature of the spine and without an anal opening, also was born with only one kidney and a blockage in the tube leading to his bladder.

Michael McGinley plays in his backyard. Lee DiDonato

SURGICAL TECHNIQUES ALLOW URINARY TRACT RECONSTRUCTION

Special surgical instruments used to remove blockages in the tubes leading from the kidney, bladder and urethra now are available. Doctors also have used optical magnification that allows them to perform delicate surgery such as the repair of a damaged bladder or the repositioning of a kidney.

Since 1978, doctors at PH have used these techniques to reconstruct the urinary tracts of 35 children and young adults.

"After Michael underwent surgery at Presbyterian, he suddenly had a burst of self-confidence," says his mother, Anita McGinley. "He started to play little league baseball after the operation. He rode his bike and took swimming lessons. He did everything that other children do.

INFANT'S URINE BAG HELPS TO 'BUY TIME'

"One of the doctors we consulted when Michael was a baby told my husband and me that our infant son might die," says Mrs. McGinley. "To buy time, the doctors decided to perform surgery that would allow Michael's urine to flow into a bag. Urologists told us that nothing else could be done. But I decided I was going to find out for myself."

The McGinleys, of Middlesex, N.J., were determined to find a solution. They took Michael from one specialist to another, until eventually, they were referred to Dr. Terry W. Hensle, director of Pediatric Urology at PH.

"After the first visit, he asked us when we would like to schedule the surgery. We couldn't believe it. For so long we were told that nothing could be done," says Mrs. McGinley.

WEARING A URINE BAG CAN LEAD TO A POOR SELF-IMAGE

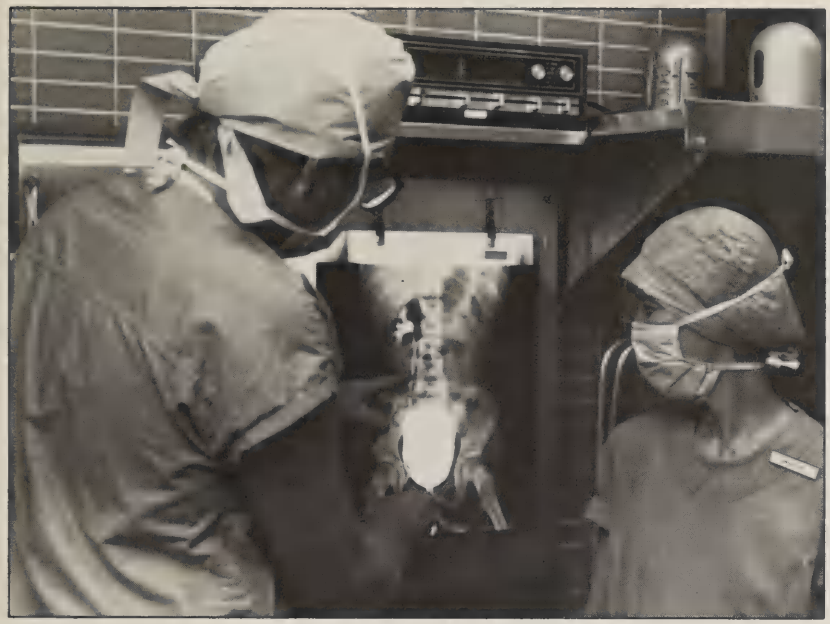
When a child is forced to live with a urine bag, such a handicap can isolate him from his peers and cause him to develop a poor self-image, says Dr. Hensle.

"We can repair and enlarge bladders, reconnect the tubes that have been rerouted in the past and remove blockages," says Dr. Hensle. "We've also found that the surgery can change our patients' lives."

Michael's life was transformed almost at once. He no longer withdrew from his peers and he also was freed from anxiety, according to his mother.

Three years after his surgery, Michael is able to control his bladder well enough to urinate without assistance. Soon after his operation, he was able to urinate normally. The 10-year-old now has periodic checkups at the Hospital to determine whether his urinary tract continues to work properly.

"We take care to make sure that everything works well when the children's urinary systems are put back together," says Dr. Hensle. "But we also want to know whether what we are doing helps them psychologically. The average age for reconstruction surgery is 12½, an awkward age because the children are approaching puberty. We're currently working with the Psychiatric Service at the Hospital to determine the social and psychological impact of the operation.



Dr. Terry W. Hensle traces the ureteral path on an X-ray with Kammun Ip, R.N., just before surgery.

Dr. Hensle initiated a study of the effects of reconstructive surgery on the attitudes and life styles of his young patients, most of whom had worn bags for six to eight years, when he noticed how much more self-confident they seemed and after they had the operation.

Preliminary results of the study show that urinary tract reconstruction has led to a more active social life and to greater self-esteem for these children, says Robert Leb, research associate.

Parents such as Mrs. McGinley also are pleased with the results.

"Michael is my $6 million baby. I watch this child, whom we've pieced together, throwing a football to his father, and I pray, don't break anything," she says. ■

URETERAL RECONSTRUCTION: THE BODY SUPPLIES ITS OWN SPARE PARTS

The urinary tract originates in the kidneys, then continues down narrow 14-inch canals called ureters to the bladder, where urine collects. When the reservoir is full, its fluid is emptied through the urethra, where the tract ends.

In extreme cases, when the ureter stops functioning, physicians may remove the kidney and transplant it back into the patient's own groin. By stretching the bladder to the kidney, the two organs can be connected, bypassing the faulty ureter altogether.

"We have performed autotransplants with good results. But, in some cases, these operations can be dangerous. If a risk is involved, we can take a piece of the patient's ileum, the lower bowel, and place it between the kidney and the bladder, or, we can fashion a new ureter from portions of the bladder itself," says Dr. Carl Olsson, director of the Urology Service at The Presbyterian Hospital.

BLADDER'S ELASTICITY MAKES IT IDEAL FOR NEW URETER

"The bladder is an unusual organ. It is designed to expand to accommodate the needs placed upon it by the kidney's production of urine," says Dr. Olsson. "Its ability to stretch makes it ideal for this procedure."

When surgeons replace the ureter, they attach a portion of bladder to the muscles and tissues in the patient's back. Then they create a tube from a piece of bladder which nearly totally replaces the entire length of the ureter.

Because the reconstructed urinary tract in this case is lined with bladder tissue, there is no danger that any impurities may be absorbed from the urine back into the blood stream as might occur if the ureter were made of a bowel segment. (See story on page 3). ■

NEW TREATMENTS AIM FOR THE BULL'S-EYE ON CANCER

Radioisotopes attached to a monoclonal antibody reach their target on a tumor and light up the malignant area on an X-ray for physicians to identify and treat.

When chemotherapy is given to a cancer patient, it attacks cancer cells in the body. Unfortunately, it poisons healthy cells as well.

As cancer drugs bombard tumors, they also destroy other cells that normally grow fast, such as hair follicles, stomach lining cells and bone marrow. "But in the past few years, we've made tremendous advances in making cancer cells especially sensitive to these drugs," says Dr. Ralph deVere White, director of Urologic Oncology at The Presbyterian Hospital.

Urologists are collaborating with other scientists at the Columbia-Presbyterian Medical Center to improve upon agents that can zero in on the offending tumor cells alone, thus minimizing any side effects.

Among the areas under study in the laboratory and, in some cases, in clinical trials with bladder and prostate cancer are:

- Monoclonal antibodies, which can search for and destroy specific malignant cells within the normal tissue.
- Tumor sensitization with new drugs that are used in combination with chemotherapy, thus enabling physicians to obtain greater effectiveness in shrinking tumors.
- Automated cell sorting, which can distinguish normal from abnormal cells, determine to what extent the abnormal cells are malignant, and finally, monitor the patient's response to treatment.

Prostate cancer strikes about 66,000 men each year. "Cancer has spread in 80 percent of prostate cancer cases by the time a patient visits a physician," says Dr. Nicholas A. Romas, associate attending urologist. "When it's gone that far, it's difficult to treat, because it already has migrated into the bones and lymph nodes."

If the tumor is confined to the prostate alone, physicians simply remove the prostate gland. When the cancer goes beyond the prostate, radiation therapy is used.

HORMONES PLAY MAJOR ROLE IN PROSTATE CANCER GROWTH

If the tumor has moved into the bones and lymph nodes, the patient may require removal of his testes, the source of the male hormone testosterone, or he may need the female hormone estrogen to control the malignancy. "The testes are the source of testosterone, which contributes to the growth of the prostate gland. In most prostate cancer cases, the abnormal growth is dependent on the male hormone. We have found that by administering female hormones, we can cut off the signal to produce testosterone," says Dr. Carl Olsson, director of the Urology Service at the Hospital.

"Unfortunately, not all patients respond to hormonal therapy. This is because only some of the cells are sensitive to the hormones. We are working to see if we can predict whether the patient will respond to estrogen therapy when he is diagnosed the first time," Dr. Olsson adds.

When it is necessary to treat a patient with radiation or chemotherapy, the problem is concentrating the cell-killing agent at the cancer site.

Monoclonal antibodies are being studied in the laboratory at CPMC for potential use in patients with prostate cancer.

The body will manufacture a different antibody, or defender, for every

foreign cell that enters the human system. When one of these intruders enters the body, it carries an antigen, or marker, which stimulates the production of antibodies that move in and attack the invader.

Each type of human cell — even a cancer cell — also carries its own unique brand of antigen. The body, however, normally will not produce antibodies which attack its own cells. But antibodies can be engineered in the lab.

SPECIAL ANTIBODIES HIT A BULL'S-EYE ON TUMOR TARGET

"Laboratory-produced antibodies are remarkably accurate in traveling directly to their targets," says Dr. Romas. "If we're successful in zeroing in on the tumor area with the antibody, then we can attach something to the antibody, such as a chemotherapeutic agent or a radioisotope, and hope that they will concentrate their effect most heavily in the area of the cancer."

Once radioisotopes or drugs are bound onto the appropriate antibodies, they are injected into the subject. The antibodies act like microscopic dump trucks hauling radioactive or otherwise hazardous cargoes to the sites where physicians hope they will do the most damage. When they arrive at these tumor sites, they latch on with their shipment of chemotherapy drugs or radioisotopes, which go to work killing the cancer cells.

The treatments, however, work best when the cancer is detected early. So, doctors are enlisting monoclonals as diagnostic tools as well.

"Modern radiologic diagnostic techniques, such as CT scanners, will detect 85 percent of all cancerous lymph nodes," Dr. Romas explains. "For those few cancer cells that are small enough to elude the scanners, we can put the antibodies to work. The antibodies make a beeline for the cancer cells. If cancer is present, radioactivity attached to the antibodies will be emitted from that site, thus pinpointing the exact tumor location."

So far, monoclonal antibodies have been used only in laboratory experiments by urologists here at the Columbia University College of Physicians & Surgeons.

RESEARCHERS ENCOURAGE TUMORS TO LOWER THEIR DEFENSES

Tumors that resist chemotherapy can be made more sensitive to these cancer-killing agents when they are combined with new drugs being developed by researchers at CPMC.

Urologists are especially interested in a compound called misonidazole (MISO), which can be sent into the bladder through a catheter. Once inside the bladder, the tumor absorbs the MISO.

When the MISO enters a cancer cell, it depletes the cell of its natural defenses against drugs and radiation. As a result, the cell is more receptive to radiation therapy.

THE FIRST TEAM TO SHOW THE SPECIAL EFFECTS OF SENSITIZING AGENTS

Ten years ago, Dr. Laurie Towle, radiation biologist and senior research staff associate, and Dr. Eric J. Hall, a radiation biologist here, were the first research team to show the cell-killing effects and natural defense reduction of various drugs, including MISO.

"MISO and other compounds, which originally were developed to enhance radiation therapy, now are showing a very strong potential to increase the effects of chemotherapy," says Dr. Hall.

Research currently is under way at the Medical Center through the College of Physicians & Surgeons, where the staff holds joint appointments, on ways of combining these sensitizers with chemotherapy.

PRECISION WORK IN KILLING CANCER CELLS

"Compounds such as MISO are quite precise when they go to work. In other words, they just kill the cancer cells in combination with chemotherapy or radiation. They only work when oxygen is at a low level, which is why they produce their best effects in tumors that have grown out of control and have a poor blood supply," says Dr. Hall.

"We end up with a selective killing of cancer cells, which normally are resistant to both drugs and radiation. Also, there is no increase in toxic side effects to hair and stomach cells."

"Using MISO in the laboratory, we have been able to improve vastly the effectiveness of chemotherapy against prostate and bladder cancer cells," says Dr. deVere White. "For the first time, we have demonstrated the reduction of prostate cancer growth

continued on next page

Dr. Carl Olsson, director of the Urology Service.

Dr. Laurie Towle adjusts equipment for irradiating cells.

in laboratory models — an achievement never before reported.

"We are so encouraged that we are beginning to treat patients who have prostatic cancer with the same combination. The lab results of using other sophisticated sensitizing agents have been even more striking," says Dr. deVere White.

MONITORING THE PROGRESS OF CANCER TREATMENT

The trademark of a cancer cell is its abnormal amount of genetic material. This material now can be stained and then analyzed on automated cell sorting equipment here that monitors the progress of treatment.

The technique used to sort the cells is called flow cytometry. Unlike cytology, in which cells are stained, examined under a microscope and actually diagnosed for malignancy, cytometry provides urologists here with a method of rapidly looking for patterns of abnormality in a sample containing thousands of cells.

If there is an abnormal pattern in the tissue, the sorter can determine the degree to which it deviates from normal tissue. A computer then can assist in an evaluation by comparing the actual data with guidelines for normal and malignant cells.

"Although still experimental, perhaps the most exciting use of flow cytometry may be to distinguish which chemotherapeutic agents will be effective against a given tumor," says Dr. Arline D. Deitch, who heads the flow cytometry laboratory in Urology.

"All of these new cancer-fighting techniques — cancer cell sorting for response to hormones and chemotherapy, tumor sensitizing agents and monoclonal antibodies — offer much promise for the patient with cancer of the urinary system," says Dr. deVere White. ■

CANCER MAY LURK IN EVERY CELL

The nucleus of each cell in the body holds about 1 million genes, which work much like a library containing a million books. These volumes list all the instructions the body needs to manufacture the proteins, enzymes, hormones and other substances vital to life. Yet, certain genes, or books, with out-of-date or incorrect information may be lurking inside each cell waiting to turn its host into a cancer cell.

"The cancer gene, or oncogene, may be there in the cell, in exactly the same way as the other genes, but its instructions are different," says Dr. Chi Nguyen-Huu, a molecular biologist at Columbia-Presbyterian Medical Center.

Only recently have scientists begun to learn how cancers originate within the genes of a cell. Genes go to work from the moment a cell is formed. But some genes outlive their usefulness. They contain instructions for tasks that the body doesn't need past a certain point in the developmental process, so the body switches them off.

"Researchers believe that these switched-off genes may turn on again in later years to cause cancer. It is believed that carcinogens, cancer-causing agents in the environment, set them off," says Dr. Nguyen-Huu.

GENETIC ENGINEERING OPENS DOORS

Recent advances in genetic engineering have allowed cancer researchers to pursue investigations into oncogenes. Dr. Nguyen-Huu is working with Dr. Carl Olsson, director of the Urology Service and chairman of the Urology Department at the Columbia University College of Physicians & Surgeons, to study oncogenes and their role in cancers of the bladder.

"Although we know that oncogenes exist, we still don't know the relationship between oncogenes and cancer. We are trying to determine if human bladder cancers have a common pattern of oncogenes and we need to learn more about how a normal gene gets turned into a cancer gene," he says.

"Research on oncogenes probably will have a significant impact on the treatment of a variety of cancers. In the future, we hope this research will enable us to prevent cancer," says Dr. Olsson.

APPLYING ONCOGENE RESEARCH TO BLADDER CANCER TREATMENT

The most immediate application of oncogene research possibly could be for the treatment of patients with superficial cancers of the bladder, he says.

"A probe of the oncogene during a biopsy would allow us to study seemingly normal tissue from several different areas in the bladder to see if we can expect a patient to develop more cancers. If we find that the oncogene already has been turned on, then we could use a more aggressive treatment," adds Dr. Olsson.

In his laboratory, Dr. Nguyen-Huu also studies cancer cells from the ovaries and testes. "We're interested in these particular cells, because unlike other cancer cells that only spawn more malignant cells, these cells have two choices — to stay malignant or become normal. We don't know of any other system in which a cancer cell can become normal," says Dr. Nguyen-Huu. ■

KIDNEY STONES: OBSTRUCTIONS CLEARED WITHOUT SURGERY

The passages and transfer points within the urinary system must be as free from obstructions as any network of roads or canals. If a stone blocks a path, it can disrupt the workings of the kidney and the urinary tract.

Surgery once was necessary to remove these painful obstructions from the kidney. Today, stones can be smashed into little bits with ultrasonic waves and then vacuumed out of the kidney through a needle-thin hole in the skin.

This technique, called percutaneous (through the skin) stone extraction, is performed as a team effort by the Urology and Radiology Services, says Dr. Carl Olsson, director of the Urology Service at The Presbyterian Hospital.

"No one is certain how many people in the United States have kidney stones, but the number is anywhere from one to 150 per every 1,000 people," says Dr. Olsson.

"Percutaneous stone removal may enable us to eliminate 75 percent of surgery for kidney stones," he adds. "The procedure requires only local anesthesia and a much shorter hospital stay. The incapacity and inability of our patients to return to work also has been decreased. In fact, we've cut a four-week convalescence period down to one week."

In the past, urologists removed kidney stones solely by surgery. Occasionally, small stones in the lower ureter were removed by snaring them with miniature "baskets" attached to long, thin wires.

Radiologists since have developed the idea of putting tubes through the back directly into the kidney while the patient is under local anesthesia. Then, they peer into the patient using a device which converts X-ray signals into a picture, or by directly observing the stones through a long tube called a nephroscope.

ACCESS TUBES ARE INCREASED UNTIL THEY FIT THE STONE

"No incision is made. First, a needle is inserted through the skin into the kidney, followed by a fine guidewire. Then, we slide a tapered plastic tube down the wire, and the small entrance through the skin is stretched. We keep increasing the size of the tube by slipping new tubes over smaller ones," says Dr. Eric Martin, director of Cardiovascular Radiology.

"Once we have access to the kidney, we can do several things. We can insert a tiny basket through a catheter tube and pull out the stone. Or, we can grasp it with forceps. The problem with pulling out stones is that we can't extract a stone that is larger than the tubes," Dr. Martin explains.

If a stone's diameter is wider than that of a dime, physicians aim an ultrasound probe at the stone and pulverize it. Then the smaller fragments may be flushed out of the kidney.

"Depending on the size of the stone, it either can be taken out in one session, or may require one or more additional visits. Larger stones and formations that resemble the antlers of an elk which fill almost the entire kidney take longer to break up and remove," says Dr. Olsson.

Once a stone has been removed, it is sent to the Hospital's Stone Referral Center, where it is analyzed.

AFTER THE STONE IS ANALYZED DOCTORS ASK WHY IT FORMED

Following analysis of the chemical composition of each stone, it must be determined what caused the stone to form. The correct diagnosis is important because the treatment used to prevent one type of stone could prompt another kind to develop.

Kidney stones usually result from a metabolic abnormality, says Dr. Olsson. Overactive parathyroid glands, as well as overactive intestinal absorption or leakage of calcium by the kidneys can lead to calcium stones. Other metabolic problems can lead to uric acid stones.

Urinary tract infections and urine that is overly acidic or alkaline also can result in stone formation.

However, stones may form in people with none of these conditions. Some stones never may produce a problem. "There are people who develop stones and simply pass them without ever visiting a physician. About 75 percent of all stones pass without treatment," says Dr. Olsson.

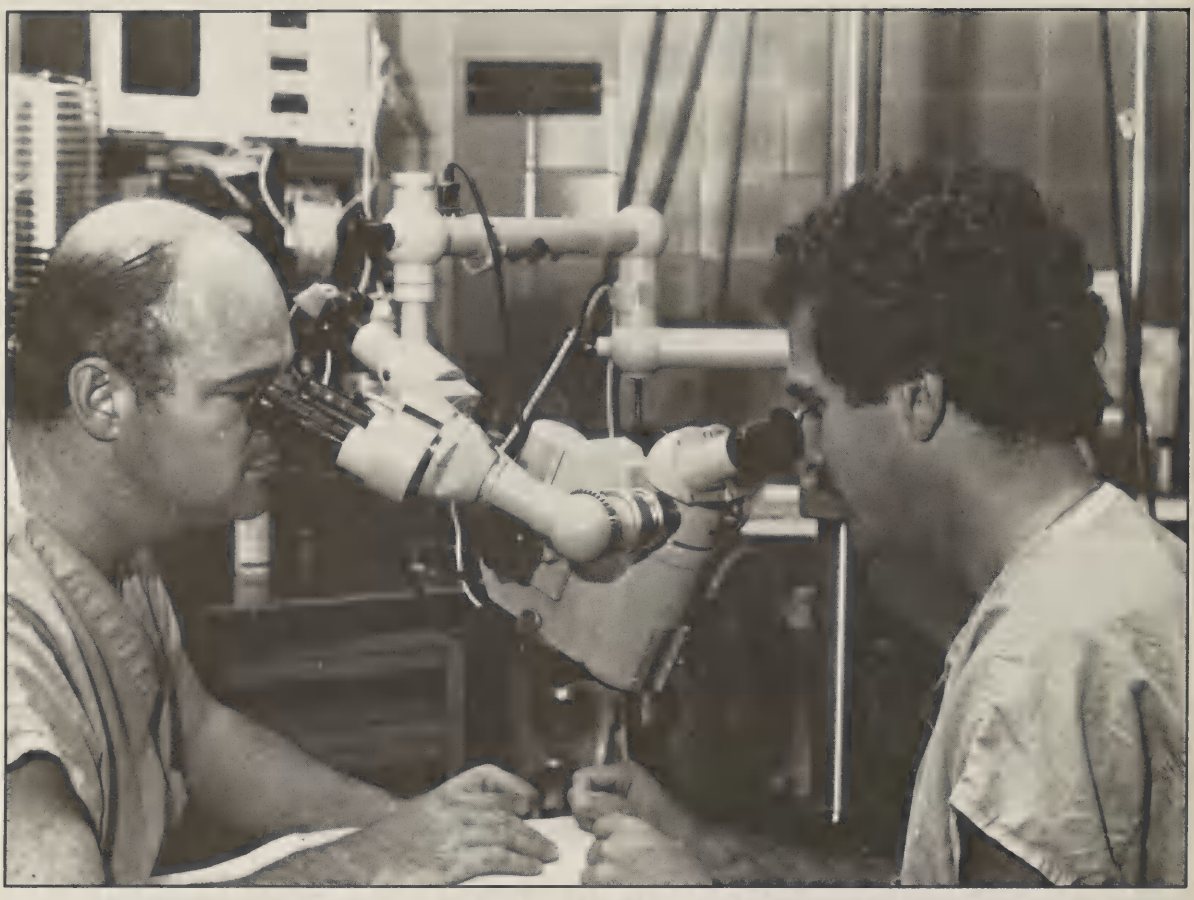
PREVENTION CAN HELP TO PROTECT AGAINST URINARY STONES

"Prevention is the best approach to the management of kidney stone disease. By modifying the diet of many patients or increasing their intake of fluids, we can prevent stones from forming or reduce the size of those already present. However, in some cases, we must use drugs," says Dr. Olsson.

Often, kidney stones recur and the patient must return to have them removed. "With the Urology and Radiology Services working as a team, our new techniques for stone removal have resulted in shortened hospital stays, reduced risk and greater savings for each patient," Dr. Olsson says.

Kidney stones may be as small as this pellet-sized stone or as large as this staghorn formation, which filled a person's entire kidney.

UROLOGISTS PROBE FOR THE CAUSES OF INFERTILITY AND IMPOTENCE



Dr. Ralph deVere White, at left, and Dr. Harris M. Nagler prepare the operating microscope for a vasectomy reversal.

A man's inability to produce a pregnancy can leave him feeling inadequate. For some couples, the psychological and social consequences of being childless can be devastating. In the past, the word infertility would have been accepted as a final verdict. But now, with newer diagnostic and therapeutic techniques, there is hope for couples suffering from infertility.

Nearly 15 percent of all couples in the nation have difficulty conceiving, often because of a disorder involving the male partner.

Infertility may result from a variety of factors, many of which are not understood by doctors.

"There is some evidence that sperm counts may have gone down during the last 50 years. One reason for this could be the increased stresses of modern life. It also may be due to pollutants in the air and water that enter and affect the cells in the body," says Dr. Harris M. Nagler, co-director of the New York Male Reproductive Center at The Presbyterian Hospital.

In other cases, infertility has a specific cause. An adolescent male who has suffered a case of mumps may find that the disease also has ravaged his sperm-producing cells. Scars caused by sexually transmitted diseases such as gonorrhea can permanently block the reproductive passageways. A varicose vein in the scrotum, called a varicocele, may alter the ability of the scrotum to keep the testicles cooler than the body's core temperature and thus damage sperm production.

Children and adults can suffer damage to one testicle when it twists within the scrotum, cutting off the organ's blood supply. This strangulation causes the cells within the testicle to die.

Doctors have not been able to determine what causes the testicle to twist, although strenuous activity or dreams have been implicated. When there is twisting, painful swelling of the scrotum occurs and permanent damage can follow.

PERMANENT TESTICULAR DAMAGE MAY OCCUR IN JUST HOURS

"If a patient isn't given proper treatment immediately, permanent damage to the twisted testicle may occur within as little as four to eight hours after the torsion. The patient risks the loss of a testicle and infertility," says

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INCONTINENCE NEEDN'T RUIN A LIFE

Anyone who ever has been stuck in a traffic jam with a full bladder knows the uneasy feeling that comes when the body issues and re-issues the command to urinate. A routine function suddenly becomes a major crisis.

For some people, the real fear of involuntarily releasing their urine in a public place haunts them. A one-block trip to the corner grocery store, for example, may be more than their bladders can handle. Little errands and social outings become dreaded occasions.

In one case, a 45-year-old executive who was on the fast track to the boardroom found that his constant urge to urinate quickly curtailed his ambitions. He began to miss meetings because he feared he would have to use the restroom. Soon he started skipping his corporation's national meetings in other cities because of long airplane rides. Eventually, he sought help from a physician, but not until his career began to crumble.

"Bladder problems such as uncontrollable wetting or the inability to urinate should not mean the end of an active social life or the destruction of kidneys," says Dr. Jerry Blaivas, director of the Neurourology Lab at The Presbyterian Hospital.

90% CURE RATE AT PH'S NEUROUROLOGY LAB

Though modern urodynamics is a relatively young science — only 15 years old — physicians have diagnosed 2,400 patients and treated 1,200 of them in the two years that the Lab has been in existence at PH. Dr. Blaivas reports that 90 percent have been cured of their symptoms. At the lab, one of a handful of fully equipped urodynamics testing centers in the world, doctors study the lower urinary tract in action to determine the underlying cause of patients' symptoms.

Some patients who seek help at the lab find that losing control of the bladder can be psychologically devastating. But when there is an obstruction to the flow of urine, the condition can be life-threatening. When urine backs up in the bladder, it forms a breeding ground for bacteria that can cause infections and stones, complications that can lead to damaged or destroyed kidneys.

The prostate gland that surrounds the bladder opening in men commonly enlarges with age, squeezing the bladder shut and blocking the flow of urine. Younger men occasionally have a similar condition, called bladder neck obstruction, which often eludes diagnosis, because the symptoms — urinary frequency and urgency — do not suggest an obstruction to the flow of urine.

The 45-year-old executive whose career almost was ruined had bladder neck obstruction which was cured surgically. He had visited many physicians before his condition was evaluated correctly. Each doctor told him his condition was psychological.

LITTLE COULD BE DONE IN THE PAST

"In the past, the most a physician could do for a patient with bladder problems was to ask for a history of his or her symptoms, perform a physical examination, and order a few tests. Because a diagnosis based on a history and physical examination alone cannot get at the underlying causes of the patient's symptoms, treatment often was ineffective and sometimes harmful," says Dr. Blaivas.

Urodynamics testing takes between 45 minutes and two hours, and is almost 100 percent accurate. A number of different urodynamics tests exist for diagnosing various bladder problems.

TECHNIQUE PROVIDES A VIDEOTAPE OF THE BLADDER

"We combine X-rays with a technique that provides a videotape of the bladder as it stores and empties urine. While the X-rays are taken, a needle on another machine measures the electrical activity of the bladder's control valve muscle, or sphincter. Specially designed catheters measure the pressure within the bladder, urethra and rectum. By using this technique, we've been able to demonstrate the cause of the patient's symptoms in most cases," says Dr. Blaivas.

A simple, often-used test is cystometry, which can help urologists determine why people wet themselves. To perform this test, fluid is poured through a small rubber tube that has been inserted into the bladder. By

continued on page 12

Leslie Oliver, R.N., and Dr. Jerry Blaivas instruct a patient on tests to check the function of the lower urinary tract.

INCONTINENCE

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measuring pressure within the bladder as it is filled, physicians can find out whether the bladder is contracting and pushing out urine without the patient's control.

Obstructions of the urinary tract, such as an enlarged prostate gland, can be detected by measuring the speed at which urine flows from the bladder. During the test, the patient urinates into a funnel that has a built-in electronic device at the bottom for measuring the rate of flow. The more slowly the urine flows, the more severe the obstruction.

FIRST VISIT TO LAB CAN YIELD ACCURATE DIAGNOSIS

For most patients, physicians at the lab can give an accurate diagnosis and a treatment plan on the first visit.

For patients who have trouble holding in their urine, there are a number of different treatments depending on the cause. When incontinence is due to involuntary bladder contractions, drugs can be prescribed to stop those contractions.

SURGERY MAY BE NECESSARY TO CORRECT SOME CONDITIONS

In some patients, especially those with neurologic conditions such as multiple sclerosis, surgery is necessary.

After surgery, patients use a technique called Clean Intermittent Catheterization (CIC). With this method, the patient takes a medicine that paralyzes his bladder and he learns how to empty his urine manually. He does this by inserting a catheter — a small, disposable tube — into his bladder every four hours.

Research to gain more understanding of bladder disorders also is conducted at the lab, which is supported by a grant from the National Multiple Sclerosis Foundation. The Eastern Paralyzed Veterans Association supports some of the special programs here for the treatment of urology patients.

With increased knowledge of the underlying causes of bladder problems, doctors at PH hope to help their patients lead more normal lives. ■

INFERTILITY

continued from page 10

Dr. Ralph deVere White, director of the Center.

Researchers at Columbia-Presbyterian Medical Center are trying to determine exactly how many hours it takes for permanent damage to a testicle to occur in these cases.

An interlocking mesh of cells forms a protective barrier, similar to a chain link fence, around each of the compartments in the testicles where sperm are manufactured. When there is damage to the testicle due to loss of blood and oxygen, this layer of interlocking cells breaks. This may allow leakage of sperm and incite the immunologic response which may damage the healthy testicle.

IMMUNE SYSTEM SIGNALS THE ATTACK ON SPERM CELLS

Because sperm do not form until after puberty, the body's immune system, which is programmed to recognize normal tissue early in life, is not aware that they are part of the adult male organism. Once they have passed through the fence, the sperm cells are perceived as foreign invaders by the body, which produces an arsenal of antibodies to attack them.

Studies at the Medical Center are changing doctors' opinions on the best way to treat testicular twisting.

"In the past, doctors were reluctant to remove a patient's damaged testicle. Now, we're more aggressive about taking out one testicle if necessary, because leaving it can lead to infertility," says Dr. Nagler.

Before any action is taken, a patient must undergo a physical examination, and submit to a sexual and medical history. In many cases, patients also will undergo blood and hormone studies. The patient's wife must be evaluated as well in order to be certain that no possible cause of a couple's infertility is overlooked.

"To evaluate only one-half of the couple and not the other half often will lead to improper diagnosis and treatment," says Dr. Nagler.

Among the tests and treatments for infertility that are offered by The Presbyterian Hospital are mucous penetration studies, in which a man's sperm is placed in sterile mucous and examined to determine how far it can penetrate. This gives an objective measurement of sperm function.

Microsurgery also is used to treat infertility. By using an operating microscope, surgeons often can reverse vasectomies and repair obstructions in the male genital tract, whether they were present from birth or acquired.

PHYSICIANS TUNE INTO THE PHYSICAL CAUSES OF IMPOTENCE

"It's only recently that we've been able to say that there are many physical causes of impotence," says Dr. Nagler. "In the past, 90 percent of all cases of impotence were considered to be psychological in origin. Now it's recognized that physical problems cause impotence 60 percent of the time."

Doctors at the Hospital perform an evaluation to determine if there are specific causes of impotence that can be corrected, such as nerve damage from slipped discs, hormonal abnormalities and inadequate blood flow.

Normal sexual performance is a complex process that depends upon the mind, the nerves and blood supply to the genitals, and hormones. Any disease which interferes with any of these systems can affect sexual performance, says Dr. Jerry Blaivas, co-director of the Center.

MANY CONDITIONS CAN LEAD TO IMPOTENCE

Among the conditions which can impair sexual performance are hardening of the arteries, high blood pressure and side effects from medications. Hormonal imbalances and diabetes, as well as tumors and pituitary gland abnormalities also may cause impotence.

In some cases, surgical implantation of a penile prosthesis may be the necessary treatment for impotence.

Urologists at PH have carried out hundreds of penile implants. "In more than 95 percent of all cases, the patient was able to return to a normal sex life," says Dr. Blaivas.

Whether impotence is physical or psychological, or both, it can be treated successfully. ■

IN MEMORIAM

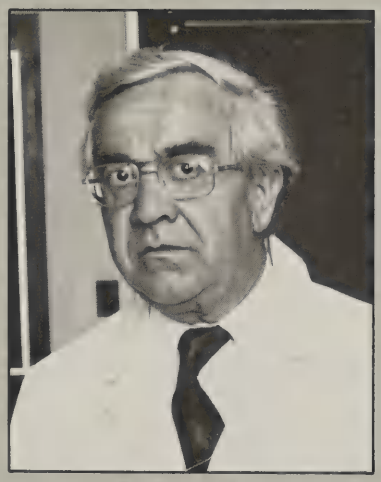
DR. RAYMOND L. VANDE WIELE

Dr. Raymond L. Vande Wiele, internationally known researcher, clinician and educator in the fields of human fertility, endocrinology and obstetrics/gynecology, and director of the Obstetrics/Gynecology Service at The Presbyterian Hospital, died on August 14 at the age of 60.

Born in Kortryk, Belgium, Dr. Vande Wiele began his medical career at the Universite Catholique de Louvain, where he performed his residency after receiving his M.D. in 1947.

Dr. Vande Wiele joined the faculty of the Columbia University College of Physicians & Surgeons in 1955. He became an attending obstetrician and gynecologist at PH in 1968, and was appointed Rappleye Professor and chairman of the Department of Obstetrics/Gynecology at P & S in 1971.

He was one of the first physicians to view human reproduction as a single, comprehensive field. As head of the International Institute for the Study of Human Reproduction here, Dr. Vande Wiele unified a multidisciplinary group of experts in obstetrics, gynecology, male and female reproductive biology, endocrinology, biochemistry, genetics, human development, psychiatry and sexual behavior.



Dr. Vande Wiele

Under Dr. Vande Wiele's leadership, a Regional Perinatal Network was founded at the Columbia-Presbyterian Medical Center to assure that high-risk infants and pregnant women from other hospitals in the New York, New Jersey and Connecticut area would have access to specialists in neonatology and maternal-fetal medicine and to the most advanced facilities for newborn care. Educational programs were made available to all hospitals in the network.

Dr. Vande Wiele was a strong advocate of family centered care and was instrumental in the consolidation of family health services (pediatrics, obstetrics, gynecology and perinatology) in the Hospital's Center for Women and Children.

He was co-director of the Hospital's newly created *in vitro* fertilization program. His own research focused on problems of female endocrinology, specifically the mechanisms of action of hormones controlling the menstrual cycle and their effect on female fertility. He did pioneering work on the induction of ovulation and much of his early work with colleagues on reproductive hormones led to advances in the treatment of infertility.

Dr. Vande Wiele is survived by his wife, Beatrice, and three daughters. ■

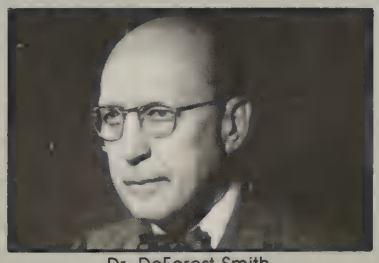
DR. ALAN DeFOREST SMITH

Dr. Alan DeForest Smith, former director of the New York Orthopaedic Hospital division of The Presbyterian Hospital, and chairman of the Orthopedic Surgery Department at the College of Physicians & Surgeons for 16 years, died on June 25. He was 92 years old.

Dr. Smith was born on May 6, 1891 in New York City. He earned his A.B. from Columbia University in 1913, and after working as a reporter for the New York Herald-Tribune, entered the College of Physicians & Surgeons. He studied at P & S until 1915, and completed his medical training at the Army Medical School in 1917.

One of Dr. Smith's most significant achievements was the integration of the New York Orthopaedic Hospital with The Presbyterian Hospital, and its move to Columbia-Presbyterian Medical Center in 1950.

During his career, Dr. Smith developed techniques for transplanting bone grafts to strengthen fragile limbs, as well as for the treatment of tuberculosis in the bones and joints, and birth defects of the spine and spinal discs. He is perhaps best known for initiating a bone bank here, the first to open at a civilian hospital.



Dr. DeForest Smith

Dr. Smith's medical career spanned 52 years. He spent 50 of them at the Hospital. He announced his retirement in June 1956, but continued as a consultant in private practice until retiring again at 80.

Dr. Smith is survived by his wife, the former Hester C. Van Dien. ■

DR. BARD COSMAN

Dr. Bard Cosman, attending surgeon in the Division of Plastic Surgery at The Presbyterian Hospital, died on August 14. He was 52.

Dr. Cosman was born in New York City on November 10, 1930. After receiving his A.B. from Columbia University, Dr. Cosman earned his M.D. from the Columbia University College of Physicians & Surgeons in 1955. He was appointed an assistant attending surgeon at the Hospital in 1963 and became Professor of Clinical Surgery at P & S in 1977.

During his career as a plastic surgeon, Dr. Cosman developed surgical techniques for the treatment of keloid scars, cleft lip and palate, and for external ear reconstruction. His research into laser treatment for port wine stains led to the widespread acceptance of the treatment.

Dr. Cosman is survived by his wife, Dr. Madeleine Cosman, a daughter and a son. ■

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IMPORTANT NOTICE TO OUR READERS

You are invited to participate in The Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity, unitrust life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information, call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

ABOUT THE COVER

Saints Cosmas and Damian, the patron saints of medicine, transplant the leg of a dead Moor onto a patient in this artist's conception of the miracle of transplantation.

(Courtesy of Pfizer Laboratories Division in *Transplantation* edited by Dr. John S. Najarian and Dr. Richard L. Simmons, Lea & Febiger. 1972. Philadelphia.)

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ORGAN TRANSPLANTS: MODERN MEDICINE REALIZES A DREAM

The chimera, a mythical creature composed of the parts of different animals, is the symbol of transplant patients.

The high-tech age of medicine has brought with it the ability to keep organs alive while transporting them hundreds of miles, the development of drugs that can trick the body into accepting a foreign organ as one of its own, and the refinement of techniques that can keep patients alive through complicated surgery. Just a few decades ago, these skills were just dreams.

In fact, the dream began thousands of years ago. The Greeks recorded the attachment of wax wings onto Icarus, who plunged to his death when he ventured too close to the sun in his attempt to fly. "That may have been the first mortality from a transplant," says Dr. Mark A. Hardy, director of Transplantation at The Presbyterian Hospital.

Transplants of skin were attempted in pre-Christian times. Surgeons of the Middle Ages and Renaissance also tried to reconstruct the skin by use of autografts, or attaching skin from the arm, for example, onto the face.

Eighteenth- and 19th-century physicians experimented with xenografts, in which organs of animals are transplanted into humans.

By the early 20th century, the study of transplants became a subject for scientists studying immunology and genetics.

TRANSPLANTATION OF MANY ORGANS NOW IS POSSIBLE

Surgeons now can transplant kidneys, hearts, corneas, bones, livers, bone marrow and even a combination of heart and lungs. In the future, they hope to begin transplanting the small intestine, islet cells from the pancreas to aid diabetics, and perhaps some day, brain tissue to relieve such debilitating disorders as Alzheimer's disease.

The era of modern transplantation began in 1954 when surgeons successfully transplanted a kidney from one brother to another. The survival rate of kidney transplants improved slowly after that first operation.

The first heart transplant was performed in the 1960s, but eventually the procedure was curtailed because of the high rate of deadly infections, a result of the drugs doctors used to discourage rejection of the transplanted organs. However, heart transplantation re-emerged as a way of successfully treating patients with end-stage cardiac disease in the mid-1970s.

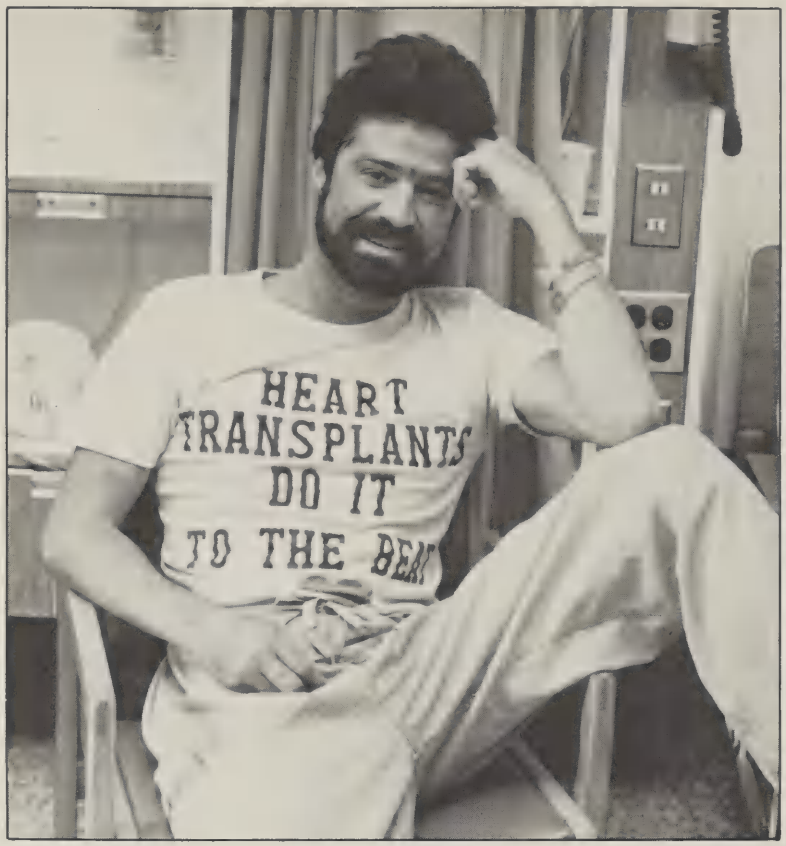
Cardiac surgeons were able to obtain improved results with heart transplants while the discovery of the drug cyclosporine improved results in the transplantation of all organs even further.

"With the advent of cyclosporine, which has been in limited use at the Hospital, and the drug's pending approval for wider use, it appears that success with transplantation of all organs will be markedly increased," says Dr. Hardy.

A paradox of the improved results of transplantation surgery is the increasing difficulty in obtaining human donor organs, says Dr. Keith Reemtsma, director of the Surgical Service.

"We need to improve the availability of donor organs," says Dr. Reemtsma. "However, in the meantime, our laboratory efforts are aimed at improving the body's acceptance of transplanted organs, as well as studies of the use of tissues from other species for transplants." ■

LIFE BEGINS ANEW FOR HEART TRANSPLANT PATIENT



Bruce Neuberger visits his old friends at the PH Transplant Unit.

Three years ago, doctors told Bruce Neuberger that he didn't have long to live. For reasons never determined, Bruce quickly was losing tone in his most vital muscle: his heart. It was becoming so flabby that it no longer could pump blood to his lungs to gather oxygen.

As breathing became more difficult for Bruce, he sought help in the New York area until his physicians referred him to The Presbyterian Hospital's Transplant Service.

"Doctors gave me two days to live, at the outside," recalls Bruce, who had been working 12-hour shifts at his recycling plant job and previously had considered himself healthy. "I was so sick, I had to sleep sitting up in order to breathe and I hardly could walk. I had fooled myself into thinking I just needed a bypass operation to correct the problem. But when I was sent to Presbyterian, they told me I needed a heart transplant."

Six weeks after his admission, the North Babylon, N.Y. man went home with a healthy new heart. A week after his discharge, he was readmitted because of a rejection problem. Bruce had to return to PH five additional times during his first six months after the surgery.

Now, after almost three years with a new heart, his life is similar to that of any other 27-year-old man. He has a steady job, a steady girl, and he often meets his friends for a beer or two on a Friday night.

In his new profession, Bruce works as an electronic technician repairing medical monitoring equipment. He also plans to earn a degree in electronics.

PH IS ONE OF A FEW CENTERS FOR HEART TRANSPLANTATION

The Presbyterian Hospital is one of six centers in the United States where heart transplants are performed. Doctors here have given new hearts to 30 patients since 1976.

"Bruce Neuberger illustrates the fact that most of our transplant patients are young people, who, after their diseased organ is replaced, can return to a full, active and useful life," says Dr. Keith Reemtsma, director of the Surgical Service at PH.

PATIENTS MAY WAIT WEEKS, OR MONTHS, FOR A NEW HEART

Patients whose cardiac disease is so bad that they need a new heart often must withstand days, and perhaps weeks or months, of waiting. Some do not survive the wait. If a heart becomes available in time, members of the PH Organ Recovery program work closely with the Hospital's transplant team surgeons to obtain and transplant the new heart as soon as possible.

"The donor's heart deteriorates quickly once it is outside the body, and will not work very well if it is not transplanted within three to four hours," says Dr. Eric A. Rose, heart surgeon and director of the Cardiac Transplant Service. "The transplant surgery actually begins when the surgical team that recovers the heart is flying back to the Hospital."

While the recovery team is in the air, the recipient's chest cavity is opened. Once the new heart arrives here, encased in two plastic bags in a bath of cool, salty liquid, the patient's diseased heart is removed. (See story on page 9.)

TECHNICAL ASPECTS OF TRANSPLANT ARE UNCOMPLICATED

"A heart transplant isn't much more complicated than any other kind of open heart surgery," says Dr. Rose. "The heart has four chambers — two atria, through which blood passes into the heart, and two ventricles, which do most of the pumping. When we perform a heart transplant, we remove the ventricles of the patient's diseased heart, leaving the atria and arteries that lead from the lungs and the body in place. While we operate, a heart-lung machine temporarily supports the patient's circulation.

"Heart transplants no longer are experimental," says Dr. Rose. "They have become the accepted treatment for selected patients with end-stage cardiac disease who otherwise would die without a new heart.

"Currently, 60 percent of the pa-

tients who receive heart transplants here can expect to be alive after one year," he says. "After five years, the rate of survival ranges between 45 and 50 percent, and it's getting better."

In the past, the body's rejection of its new heart was one of the greatest obstacles to a successful transplant. When a new organ is placed in the body, the immune system attacks it, just as it would attack an invading bacterium or virus. The system reacts to foreign tissue as a naval force might to an enemy submarine entering off-limit waters by sizing up the enemy, attacking and destroying the trespasser.

The battle against this immune reaction recently has become more successful. A new medication called cyclosporine all but eliminates rejection of the new organ by suppressing part of the body's immune system. (See story on page 12.)

FREQUENT BIOPSIES MONITOR NEW HEART FOR SIGNS OF REJECTION

Physicians also perform frequent biopsies, examining samples of tissue from the transplanted heart for inflammation, an early sign of rejection.

"There is no single reason for our growing success in helping heart transplant patients recover and return to normal lives," says Dr. Rose.

"While transplants are considered to be surgical procedures, an enormous amount of time is devoted to patient care before and after the transplant," explains Dr. Reemtsma. "The surgery could not take place without the support and help of the nursing and medical staff."

A TRANSPLANT COORDINATOR TENDS TO ALL REFERRALS

Patients with severe heart disease are referred to the PH Heart Transplant Service through Joann Lamb, R.N., heart transplant coordinator, who keeps in touch with cardiologists outside the Hospital.

"Patients are sent here for transplants as a last resort when there is no other option for cure," says Ms. Lamb.

Once a patient is referred here for a transplant, the staff determines whether a heart transplant is the best alternative for him.

"After we evaluate the patients, in some cases, we find that conventional treatment with drugs or open heart surgery is more appropriate," says Dr. Ronald E. Drusin, associate attending cardiologist.

TRANSPLANT PATIENTS RECEIVE A THOROUGH EVALUATION

The evaluation includes checks by dentists, who examine heart transplant candidates for mouth infections, which can become aggravated after surgery. Social workers also meet patients to assess their attitudes and to determine whether they have a strong network of family and friends whose support they will need during their recovery.

"You've got to have people behind you, cheering you on," says Bruce. "There's no guarantee that you'll make it, but half the battle is attitude. Once you're up, you've got it licked."

After surgery, staff nurses closely monitor the patient's recovery with close supervision. In the first weeks after surgery, heart transplant patients are kept in isolation and are monitored 24 hours a day to guard against infection.

"We work so closely with these patients that we become very attached to them," says Inger Christensen, R.N., head nurse of the Transplant Unit. "We develop a good rapport with the patients that makes it easier to work with them and gives us a lot of personal satisfaction."

It is the nurses with whom the patients have the most contact. The patients depend on the nurses for everything from meals and medications to friendship and emotional support.

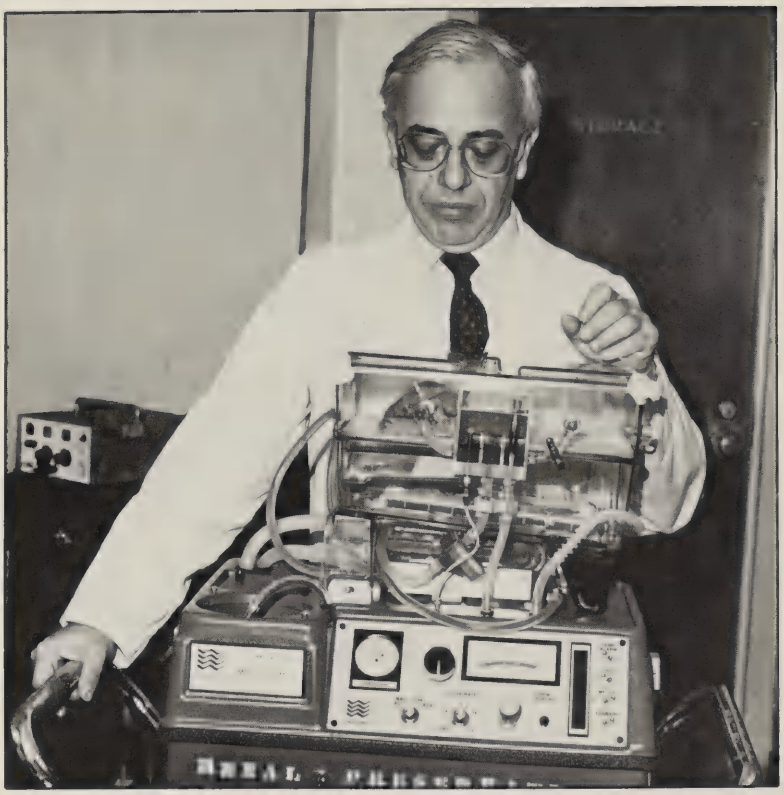
As the patients recover, the nurses teach them how to control their diet, and how to take and monitor their medications. By the time patients are ready to go home, they often have gained lasting friendships as well as new hearts.

"Everybody at the Hospital has treated me like gold," says Bruce. "I know the people who took care of me well, and that makes me feel more comfortable when I come back for a checkup. The Transplant Unit is like my little family.

"Between the doctors, nurses and the man upstairs, I'm doing OK." ■

The Open Heart Surgery Team performs a heart transplant. Inset shows the flaccid condition of the diseased heart.

KIDNEY TRANSPLANTS OFFER FREEDOM FROM A LIFETIME ON DIALYSIS



Dr. Mark A. Hardy inspects a kidney on a portable perfusion machine just before transplant.

Every day, the kidneys remove about a quart of waste from the nearly 50 gallons of fluid that is filtered through them.

If one kidney fails, the other one readily takes over. But if both kidneys were to fail, deadly toxins soon would overpower the body.

When this happens, a patient either must undergo dialysis treatments for the rest of his life, or he must seek a kidney transplant.

Since surgeons at The Presbyterian Hospital performed their first kidney transplant in November 1969, more than 250 transplants have taken place here.

About 40 kidney transplants are performed each year at the Hospital. Most patients who receive them can return to normal life styles a few months after surgery.

"For most patients, the alternative to a transplant is being tied to a dialysis machine for a lifetime," says Dr. Gerald B. Appel, medical director of Dialysis.

"There has been a dramatic increase in patient survival after transplantation due to new drugs that can combat rejection of the new kidney. Also, the intensive support we offer at the Hospital has led to improved survival," he adds.

A patient who seeks a transplant must undergo three interviews. First, he meets the program director to discuss kidney transplantation, and takes a tour of the Transplant Unit, where he can talk to transplant patients and the staff who care for them. He then returns for a medical examination, blood tests and a discussion of the potential risks and benefits of the kidney transplant he hopes to receive. Finally, he meets with psychiatrists who evaluate his attitude toward living with a transplanted kidney.

Once accepted as a candidate, the patient must be tissue-typed. A sample of blood is taken and immunologists test for certain antigens or markers, which are unique to each individual. These markers identify each person's genetic makeup, which is matched with the potential donor. (See story on page 5).

RENAL COORDINATOR MATCHES CANDIDATES AND DONOR ORGANS

Judith Cianci, R.N., renal transplant coordinator, who tracks all transplant candidates and their blood samples, says that when a donor is available, Dr. Nicole Suciu-Foca and her staff of immunogeneticists perform a final cross-match of the donor and recipient tissue to ensure that the kidney will not be rejected.

Kidneys may come from a living related donor or from a cadaver. When a kidney is recovered from within the Hospital or the New York Regional Transplant Program network, PH has the option to cross-match the organ for a potential recipient or, if no suitable match can be made, to offer the kidney to a pool of other hospitals within the network, says Miss Cianci. Sometimes the Hospital may be offered a kidney from another state or even from another country.

While a patient may wait only a few days or up to a year or more for a new kidney, the actual surgery is accomplished in about four hours.

Because the recipient's faulty kidneys still produce hormones, especially one which helps keep the blood count normal, the original kidneys are not removed, says Dr. Appel.

Kimberly Oliver donated one of her kidneys to her 6-year-old son Christopher. The success rate is nearly 100 percent when the kidney is from a living related donor.

Surgeons transplant the new kidney into the lower abdomen. There it is attached to the blood supply.

During the transplant surgery, the kidney is kept alive on a perfusion machine, which maintains the proper temperature and provides it with oxygen. Just before surgery begins, the patient receives drugs to combat any rejection of the new organ.

REJECTION MAY OCCUR IN FIRST WEEKS AFTER SURGERY

"Only a small percentage of kidneys don't have any rejection in the first few weeks. But we can adjust the anti-rejection drugs, and, in a few weeks, most kidneys work well," says Dr. Appel.

"Our success rate is 70 percent when cadaver donors are used, and almost 100 percent when relatives' kidneys are used, and the rate is increasing," he says. "This is due to our personalized program which offers very deep staff involvement on all levels, from the surgeon to the kidney specialist to the nursing, dietary and social work teams. We're very attuned to the problems and needs of the transplant recipient." ■

TISSUE TYPING MATCHES THE BODY'S CHEMICAL FINGERPRINTS

Surgical techniques have made transplantation of certain organs a reality, but the body's immune system is the biggest hurdle that physicians must overcome in assuring a transplant patient's survival.

Before a kidney can be transplanted, it undergoes a process called tissue typing.

The Immunogenetics Laboratory at The Presbyterian Hospital separates sample white blood cells from a potential recipient's blood. These cells then are exposed to substances that recognize all the known transplantation antigens or markers on the outside of cells which trigger the body's immune system into action.

The patient's white blood cells control his body's rejection of foreign substances or antigens, such as a new organ. If a blood sample from the potential recipient kills the donor's white blood cells, the recipient would reject that donor kidney, says Judith Cianci, R.N., renal transplant coordinator.

"Blood samples are screened for antibodies, or defenders against foreign cells, and selected samples are prepared and put on trays. When I get word that a kidney is available, the typing lab cross-matches all of these trays with a sample from the donor kidney. The recipient with the best match then is chosen. If two candidates match, the patient who has been waiting longer will receive the kidney. But the main concern is that the match be as close as possible," says Miss Cianci.

Blood samples are taken once a month from transplant candidates because antibodies change with exposure to new antigens. For example, the blood transfusions that transplant patients undergo while on dialysis affect the production of new antibodies.

Because antibody levels may change monthly, the transplant coordinator needs to know if the potential recipient is producing a lot of antibodies. If he is, it becomes increasingly difficult to find a compatible kidney, says Miss Cianci.

MANY ANTIGENS ELUDE RECOGNITION

"There are many antigens that we don't even recognize yet," says Dr. Mark A. Hardy, director of Transplantation.

"These antigens are under study here. In the future, we'll reach a point where we can force the body to accept a new organ without using drugs to shut down the immune system entirely." ■

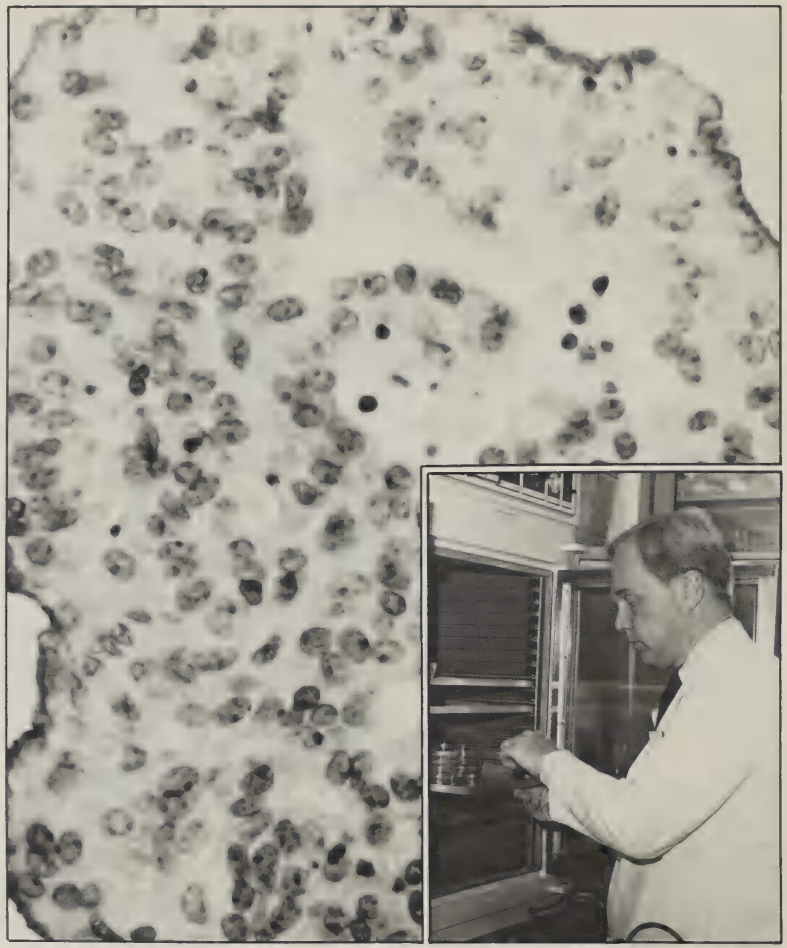
PH PHYSICIANS WRITE NEW CHAPTERS IN THE TRANSPLANTATION SUCCESS STORY

Human organ transplants — once the far-reaching dream of ancient and even 20th-century surgeons — today are the accepted treatment for some disorders.

As the survival rate of patients with new kidneys, hearts and livers continues to improve, so does the optimism of transplant surgeons.

In the future, heart-lung, bone marrow, pancreatic islet cell, intestinal and even brain tissue transplants may offer new hope to many patients.

"Transplantation is here to stay. It's not a cure, but it can allow a seriously ill or dying patient to resume a normal life. In the case of a patient with end-stage heart or liver disease, death is the only alternative to a transplant," says Dr. Mark A. Hardy, director of Transplantation at The Presbyterian Hospital.



An isolated pancreatic islet cell which produces insulin. The inset shows Dr. Collin J. Weber with pancreas fragments in tissue culture.

ISLET CELL TRANSPLANTS HOLD PROMISE FOR DIABETICS

Research at the Columbia-Presbyterian Medical Center on pancreatic islet cell transplants holds great promise for patients with severe forms of diabetes.

The pancreas, a banana-shaped gland that sits between the stomach and the spinal column, makes insulin, which helps to regulate blood sugar levels.

Inside the pancreas, millions of tiny salt crystal-sized islets manufacture insulin. When these islets degenerate, the body's insulin supply is cut off. The patient then must take daily insulin injections.

"We feel it's too risky to transplant the entire pancreas when we compare the potential complications of diabetes to those of a whole organ transplant. For this reason, we are studying the transplantation of just the islet cells for diabetes," says Dr. Collin J. Weber, assistant attending surgeon.

Thus far, research has shown that grafts of insulin-producing tissue either prevent, delay or reverse diabetic complications, says Dr. Weber.

Dr. Weber is trying to isolate and purify insulin-producing cells from the pancreas in large enough numbers so that they will be effective in the treatment of diabetes. In the laboratory, Drs. Weber, Hardy and Keith Reemtsma, director of the Surgical Service, also are devising ways to manipulate donor cells so that they won't be recognized as foreign by the recipient.

"It's likely that we will be doing these islet cell transplants on patients within the next few years," says Dr. Weber.

"The beauty of islet cell transplants is that they won't involve major surgery. Instead, the islets simply would be injected into various sites in the body," says Dr. Weber.

TRANSPLANTING THE SMALL INTESTINE

Intestinal transplants would give patients whose upper bowels are missing due to disease or accident a normal life, says Dr. Hardy.

The small intestine is such an essential part of the digestion process that if it is missing, a person soon would die for lack of the essential nutrients that it absorbs. However, intravenous nutrition, called Total Parenteral Nutrition, can be provided for patients with certain intestinal problems.

Patients on TPN face many life-threatening dangers, particularly infections, and, the cost of maintenance is high. Because this method of getting nutrients requires a constant attachment to an intravenous unit, the patient cannot have a normal life and usually is hospitalized for months or years. For this reason, transplantation would be preferable.

However, the intestine contains very fragile tissue and dies without blood. For this reason, a donor intestine must be transplanted within

12 hours of its removal.

"Many of the cells in the intestinal wall that carry and absorb fats would die during the transplant surgery from lack of blood. It takes four to six weeks for them to regenerate. But during that time, we can feed the patient intravenously," says Dr. Hardy.

PH SURGICAL TEAMS GEAR UP FOR LIVER TRANSPLANTS

Since the advent of cyclosporine, (see story on page 12) the survival of liver transplant recipients has climbed from 20 percent to 70 percent.

"We are considering a liver transplant program at PH. The teams are ready to begin, and may be called into action soon," says Dr. Hardy.

Implanting a donor liver is technically the most difficult of all the transplant operations, says Dr. R. Peter Altman, director of Pediatric Surgery.

"The new liver must be put into the place from which the original organ was removed because four blood supply junctions must be connected as well as the bile duct. If there's a problem in any of these places, the operation may fail," says Dr. Altman.

The liver removes toxins, produces blood proteins and cholesterol, and converts fats, sugars and proteins into energy. Once the liver fails, the body cannot be kept alive, as it can on dialysis when the kidneys fail.

"At present, 80 to 90 percent of the patients who need a new liver die waiting," says Dr. Altman. "But now that liver transplants have become a clinical reality, we hope there will be growing awareness among potential donors that the liver is an organ that can be donated to save someone's life."

BONE MARROW TRANSPLANTS: AID FOR LEUKEMIA AND ANEMIA?

"Bone marrow transplants are considered to be the next important step in the management of leukemia and other types of cancer, or cases of aplastic anemia and thalassemia," says Dr. Michael Katz, director of the Pediatric Service.

The marrow is transplanted to help restore the production of healthy blood cells. Before a transplant is performed, the patient receives large doses of chemical agents or intensive radiation to destroy his own abnormal bone marrow which then is replaced with healthy marrow from a donor.

If a donor's marrow is matched with a recipient, it is removed from a living donor's pelvic bone and given intravenously just like a blood transfusion.

Since the bone marrow contains lymphocytes, white blood cells whose job is to defend the body, these cells may turn against the new host resulting in what is known as graft versus host disease. Treating the donor marrow with specific antibodies or the patient with an anti-rejection drug like cyclosporine could prevent this, says Dr. Sergio Piomelli, director of Pediatric Hematology.

Bone marrow transplants are expected to be available at the Hospital by next year.

The Adam Karsh Foundation recently was established in the memory of an 8-year-old boy who lost his life to cancer of the lymphatic system. The foundation will help support a bone marrow transplantation program at PH.

continued on next page

Dr. Earl Zimmerman studies cells from the hypothalamus.

BRAIN TISSUE TRANSPLANT IS A POSSIBILITY

The transplantation of the entire brain is unlikely in this century, if ever, says Dr. Bennett M. Stein, director of the Neurosurgery Service at the Hospital.

"To get the donor brain hooked up with the recipient's nervous system would be an enormous undertaking. There are millions of connections in the brain and there's no way to link them to a recipient. Even if there were, they wouldn't be able to grow together or connect because this tissue just doesn't regenerate," says Dr. Stein.

While whole brain transplants may not be possible, the transplantation of brain tissue is a whole new frontier, says Dr. Earl Zimmerman, attending neurologist at PH: "Perhaps we'll see some form of this in the next decade."

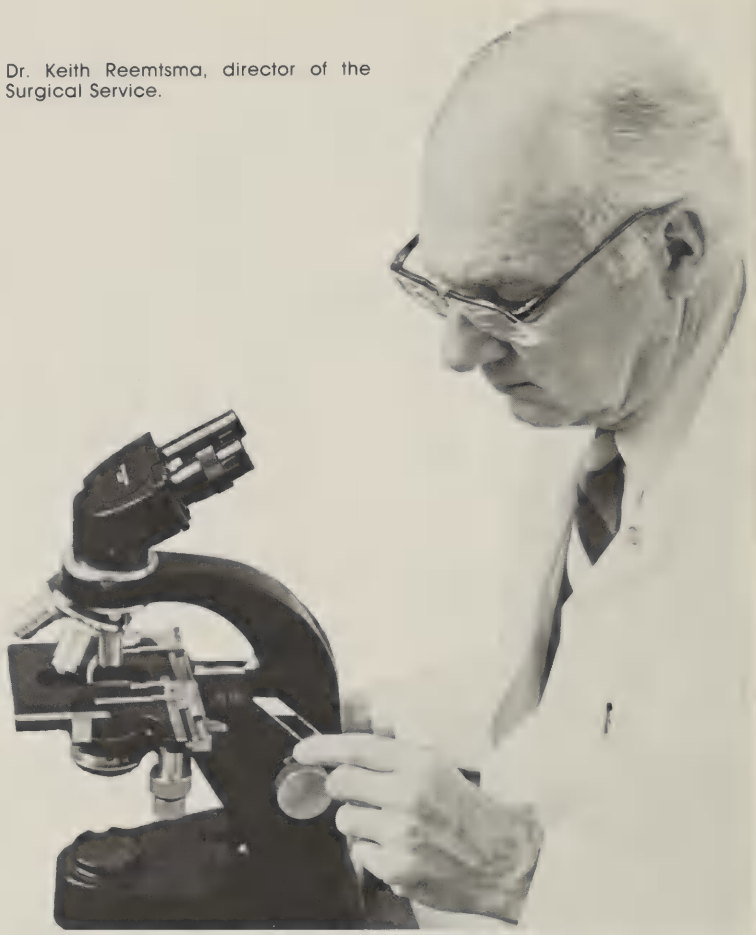
In the laboratory, Dr. Zimmerman is studying the transplantation of cells from the hypothalamus in collaboration with other members of the Center for Reproductive Sciences at the Columbia University College of Physicians & Surgeons and with researchers from Mount Sinai Hospital in New York and Oxford University in England.

The hypothalamus, about as large as a lima bean, regulates the body's endocrine system. Destruction of the hypothalamus can cause life-threatening adrenal and thyroid problems and many other disturbances, including the inability to reproduce.

"We don't expect to transplant the entire hypothalamus, because of the difficulty in getting an adequate blood supply to the tissue. Brain tissue dies rapidly when disconnected from the blood vessels — it wouldn't survive more than a few minutes," says Dr. Zimmerman.

"Also, many important pathways that pass through the hypothalamus would be disturbed if we attempted to transplant the entire region. Because of these problems, we're studying the replacement of specific cells."

In the laboratory, he puts "a brain into the brain." This is done by injecting donor cells into laboratory models. His studies have shown that these transplanted nerve cells can produce active hormones in the hypothalamus.



Dr. Keith Reemtsma, director of the Surgical Service.

"After many more years of laboratory research into safety and the practicality of replacing such cells, it may become possible to replace the specific nerve cells known to be missing in Parkinson's disease and Alzheimer's disease, and probably in other neurological disorders in which the cause remains undiscovered," says Dr. Zimmerman.

IRREVERSIBLE LUNG DAMAGE MAY AFFECT THE HEART

Some patients with irreversible lung damage also suffer heart disease that may make heart-lung transplants necessary.

"When a patient has severe lung disease, the right part of the heart has to pump harder and tires easily. As a result, the patient's circulatory system works less efficiently and the heart and other organs begin to suffer and deteriorate," says Dr. Hardy.

"We're studying heart-lung transplants in the laboratory and we hope to make them a clinical reality in the near future," says Dr. Keith Reemtsma, director of the Surgical Service.

Technically, it would be easier to transplant the heart and lungs together, says Dr. Hardy. Also, problems could arise from a lung transplant alone, especially possible leakage from the bronchial tubes, he adds.

TRANSPLANTATION CAN GIVE LIFE AND KNOWLEDGE FOR THE FUTURE

"Transplantation has allowed us not only to help many patients survive with a much improved quality of life, but also has helped us in studies relating to immunology, and has given us new knowledge about cancer and auto-immune diseases," says Dr. Hardy. ■

RETRIEVING A LIFE-SAVING GIFT

The ceremony that surrounds a police escort is an honor usually reserved for state occasions. When John Kiernan uses a convoy, he's racing against the clock to make an urgent delivery of a precious, perishable cargo — a new heart for a patient who may be hours away from death.

As organ recovery coordinator at The Presbyterian Hospital, Mr. Kiernan has chartered jets to such cities as Montreal, Richmond, Knoxville and Allentown to give new lives to heart transplant patients here.

"We can't go any farther than a radius of 650 miles from the Hospital for a heart. We're limited to the number of cities from which we can get a donor heart. A heart only can be preserved for four hours, so our travel time must allow for ground traffic, even with a police escort, and for adverse weather," he says.

CLOCK BEGINS TO RUN ONCE THE ORGAN IS RECOVERED

"Before we leave, I know how long the flight to the donor hospital will take, and how long it will take us to get back to PH. Once we've recovered a heart, the clock begins to run on us."

The success of the heart transplant program at the Hospital is due, in part, to what Mr. Kiernan calls a proven technique for long-distance heart recovery: "We have a well-established communications network, a good relationship with our aircraft team, and we only fly in planes with telephones so that we can keep in touch with our medical and surgical staff and with the donor hospital."

When Mr. Kiernan pursues a donor heart, he says, "Instant response and predictability from our transportation system is essential. We cannot afford to have any system failures."

ICE CHEST AND STERILE SOLUTION PRESERVE THE HEART DURING TRANSIT

Next to his desk is a 50-quart ice chest which he grabs just before rushing out on a recovery mission. It is filled with containers of cold sterile solution and slushed ice which cool the heart while preserving its cells. Sterile plastic bags, a container for packing the heart and supplies for flushing donor blood from the heart to avoid clotting go into a separate pack.

At the donor hospital, Mr. Kiernan and the surgeons who accompany him carefully review the donor's chart to ensure that the new heart meets all of the criteria necessary for transplantation. The donor's chart must contain brain death notes and a properly signed consent for organ donation.

When the heart has been removed and packed, Mr. Kiernan calls the surgical team at PH to alert them that the heart is en route. Surgeons at the Hospital then begin working on the patient to coordinate the removal of the diseased heart with the arrival of the healthy heart.

IT ALL BEGAN ON "HEART DAY"

Appropriately, Mr. Kiernan began working at PH on Heart Day — February 14, 1979. Ask him about that quirk of fate, and he simply says, "I've got a real sweetheart of a job."

While part of his work involves the drama of nocturnal flights throughout the Northeast and high-speed rides under police escort from Teterboro Airport in Northern New Jersey to upper Manhattan, Mr. Kiernan also is an educator and counselor to families in grief.

He instructs nurses and physicians on organ recovery and the medical criteria for organ donation during professional seminars. Mr. Kiernan is responsible for coordinating all organ and tissue donations at the Hospital.

TEACHING HEALTH PROFESSIONALS ABOUT ORGAN DONATION

"The task remains to encourage health professionals to familiarize themselves with organ donation criteria, to identify potential donors and to refer them to the nearest transplant or recovery program," Mr. Kiernan says.

"The public also must be encouraged to recognize the need for organ donation," he explains. "It's important that a person who has completed a donor card let his fami-

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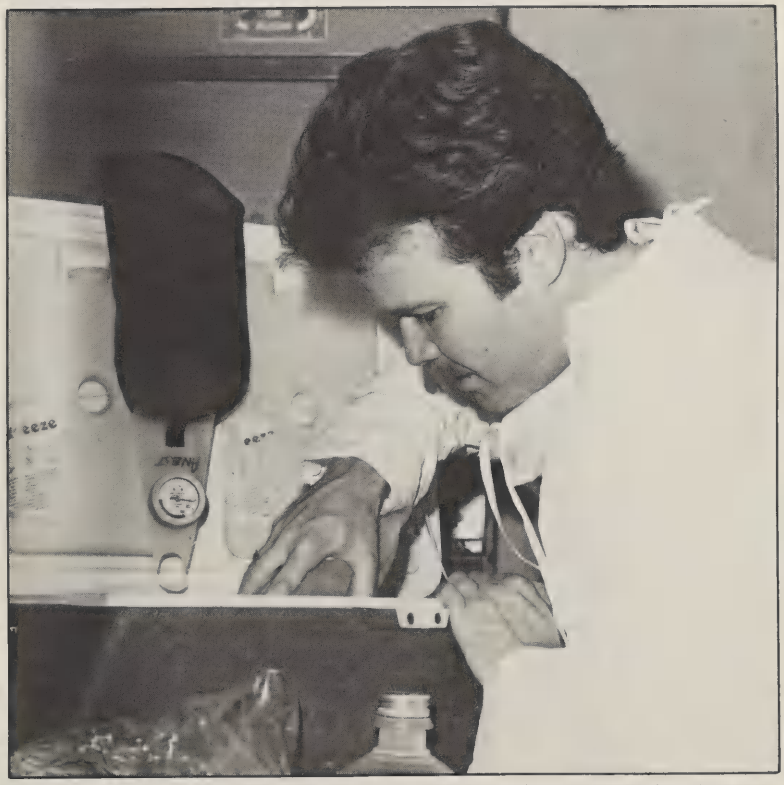


John Kiernan, organ recovery coordinator, prepares supplies necessary for a long-distance heart transport.

A NEW CORNEA GIVES A CLEAR VIEW OF THE WORLD

The cornea covers part of the eye's front surface, much like the crystal on a watch. If this transparent portion is injured, or if excess moisture accumulates, light cannot enter inside.

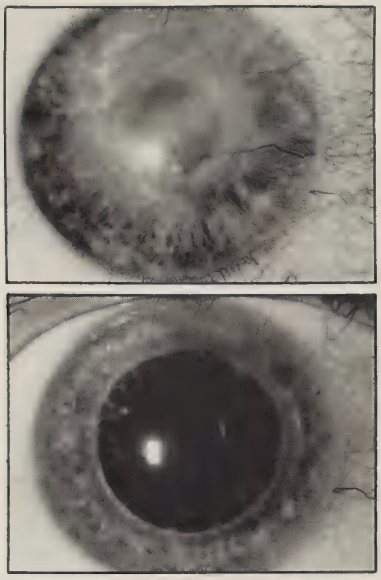
When scratches mar a watch crystal so that the numbers are indistinguishable, the glass must be replaced. Similarly, a person whose cornea loses transparency because of injury or illness often can seek a corneal transplant.

"We can't give the recipient exactly what he had before he began to lose his vision. However, we can cut a button-sized piece from the donor's cornea about one-half to two-thirds the size of the original and restore some of the recipient's eyesight," says Dr. Dobli Srinivasan, associate attending ophthalmologist at The Presbyterian Hospital.

Working under an operating microscope, eye surgeons decide upon the area and size of the section that will be taken from the donor for transplant. A punching device is used to cut out the donor "button." Then, a hole the same size is made in the recipient's eye where the "button" is attached, says Dr. Srinivasan.

CORNEAL TRANSPLANT SUCCESS RATE IS NEARLY 90 PERCENT

"The success rate for corneal transplants is close to 90 percent in certain cases. This is mainly because the cornea has no blood supply and it will not reject a transplant from another person's eye the way the body might reject a donated kidney, for example," he adds.



On top, clouded cornea. In lower photograph, a clear cornea after transplant.

"However, because there is no blood supply, the transplanted cornea takes a long time to heal. The sutures remain in the eye for as long as six months," says Dr. Srinivasan.

A patient also may need a corneal transplant when a cell layer within the cornea called the endothelium breaks down. Because the endothelium cannot be changed or corrected to help it function properly, patients with this disorder often require a transplant.

Patients who have a condition called keratoconus, a degenerative thinning and disfiguration of the cornea, also are candidates for transplants. When the cornea becomes permanently scarred because of accident or infection, a transplant may be necessary, as well.

"In the past, donor corneas would keep for only 12 hours. Now, we can preserve them for up to three days in a special solution."

Before corneas are transplanted, they first must be checked to ensure that they are intact. "We can't take corneas from donors with certain degenerative nerve diseases, or from patients with rabies or meningitis, because these conditions can be transferred," he says.

"We have a waiting list of patients who need corneas. Some of them may wait a long time, but most patients who need a cornea will get one eventually." ■

A LIFE-SAVING GIFT

continued from page 9

ly know that he wants to donate organs upon death.

"So many families never have discussed the issue. When they are asked if their loved one will be a donor, they agonize over the decision."

When he talks with families who have just learned that a loved one has died, Mr. Kiernan finds that he often becomes a bereavement counselor.

THE QUESTION OF ORGAN DONATION IS A SENSITIVE ISSUE

"I don't want anyone to feel that he has been pressured into organ donation and then to feel bad about the decision later. At the same time, I think of the people who are desperate for transplants. If a decision is too long in coming, the deceased person's organs may have begun to deteriorate irreversibly and be useless for transplantation," he says.

There is a critical shortage of organs for transplantation. About 10,000 people are waiting for kidneys in the United States. Only about 4,000 of them will get a new kidney this year, if ever.

"We clearly have a problem. While kidney patients can live on dialysis until a new kidney is available, patients who need a new heart or liver can die waiting," he says.

FEAR CAN DISCOURAGE POTENTIAL DONORS

There are many negative attitudes toward organ donation, Mr. Kiernan explains. Some people fear that carrying a donor card would compromise their care if they were in critical condition. Others fear mutilation of the body, while certain groups view organ donation as a violation of their religion.

"Very slowly, I'm seeing an improved public response to our requests that they consider organ donation," says Mr. Kiernan. "There also has been a noticeable increase in donor referrals by physicians.

"For a recovery program to be successful, it depends on the generosity of the donor families during their grief and the caring professionalism of the doctors and nurses who are responsible for the medical management of the donor. Without these two elements, organ recovery is impossible." ■

BONE TRANSPLANTS: THE PATIENT BECOMES HIS OWN DONOR

By the time most children are toddlers, they've learned how to walk. But some tots and even older children haven't had that experience yet because of cancer or congenital bone fractures that resist healing.

Once, these children faced amputation. But since 1980, orthopedic surgeons at The Presbyterian Hospital have been able to save 41 children and adults from that fate by transplanting bones from their healthy legs into their defective limbs.

In the procedure, called a fibular or partial leg transplant, surgeons remove the diseased portion of the tibia — the thick bone in the lower leg — and implant from the normal leg the fibula — the thin bone that runs down the outside of the lower leg from the knee joint to the ankle.

The cylindrical segment of healthy bone is removed with the blood vessels, which are reattached under an operating microscope.

"We have the best results when we use the patient's own bone instead of donor bone," says Dr. Harold M. Dick, acting director of the Orthopedic Surgery Service.

"The healing is excellent because the bone has its own blood supply. Also, we can use a longer segment of the fibula. When donor bone is used in segments longer than 2 inches, it often dissolves, shrinks and breaks."

BONE REMOVAL WON'T HARM THE DONOR LEG

Nothing is lost with the fibular transplant technique, explains Dr. Dick. The removal of the fibula won't harm the normal leg because most of the weight is borne by the tibia.

The transplanted fibula resembles a small matchstick when placed in its new housing. As it heals and thickens, it eventually fills the space of the removed larger bone.

"The advantage of this procedure is that the patient can donate his own bone for the transplant. This allows surgeons to perform the procedure without having to wait for immunological breakthroughs, and it spares the patient the ordeal of organ rejection," explains Dr. Dick.

PH IS ONE OF TWO CENTERS TO PERFORM FIBULAR TRANSPLANTS

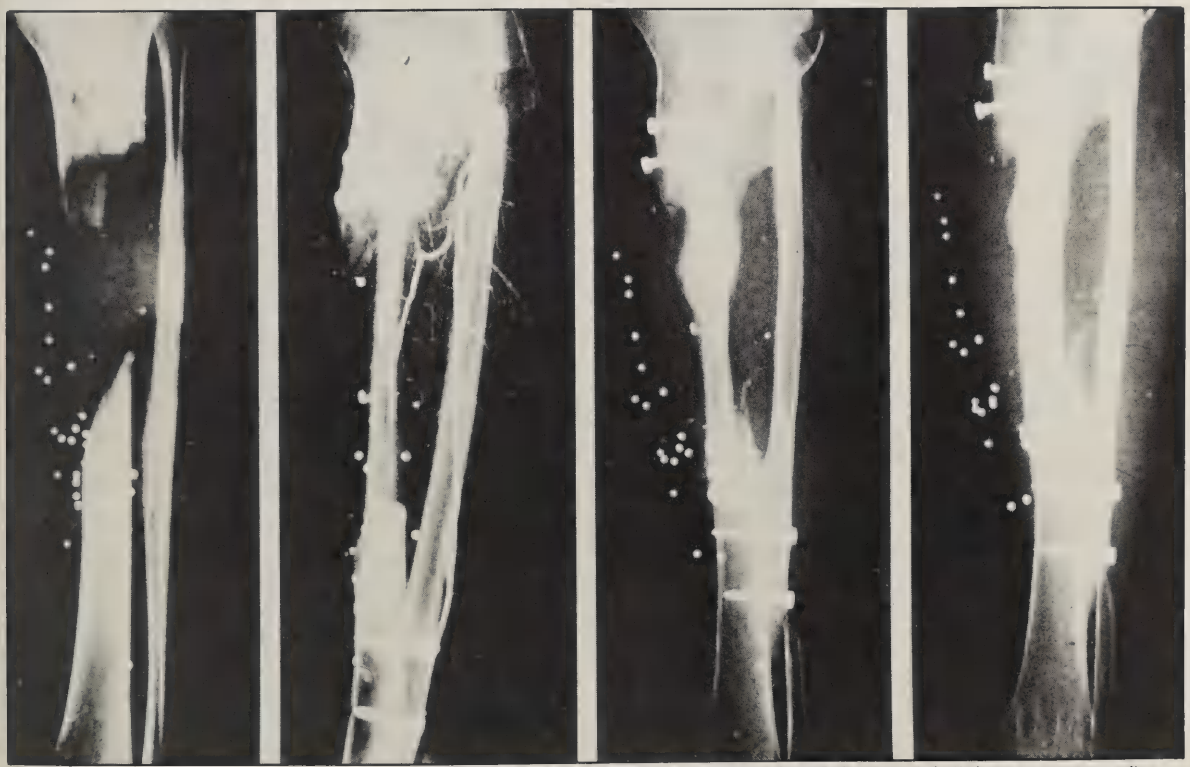
The Hospital is one of two centers in the United States that performs fibular transplants.

Muscle transplants, although very rare, also are possible in this era of transplantation, says Dr. Dick.

Orthopedic surgeons can take muscle from a patient's thigh or chest and transplant it into the damaged area of the arm or foot, he adds.

Just as in fibular transplants, the muscle is removed with its blood supply and nerves, which later are reattached. "We can restore 50 percent of the movement to the arm in most cases," says Dr. Dick, who successfully has performed two such procedures here in the last two years.

"The techniques to transplant arms, legs, hands and feet are here and well developed, but we still need freedom from rejection," he says. ■



X-ray series shows the section from which the diseased bone was removed. Second from left, its matchstick appearance after transplant, and its eventual growth.

CYCLOSPORINE PROTECTS DONOR ORGANS FROM THEIR NEW "HOSTS"

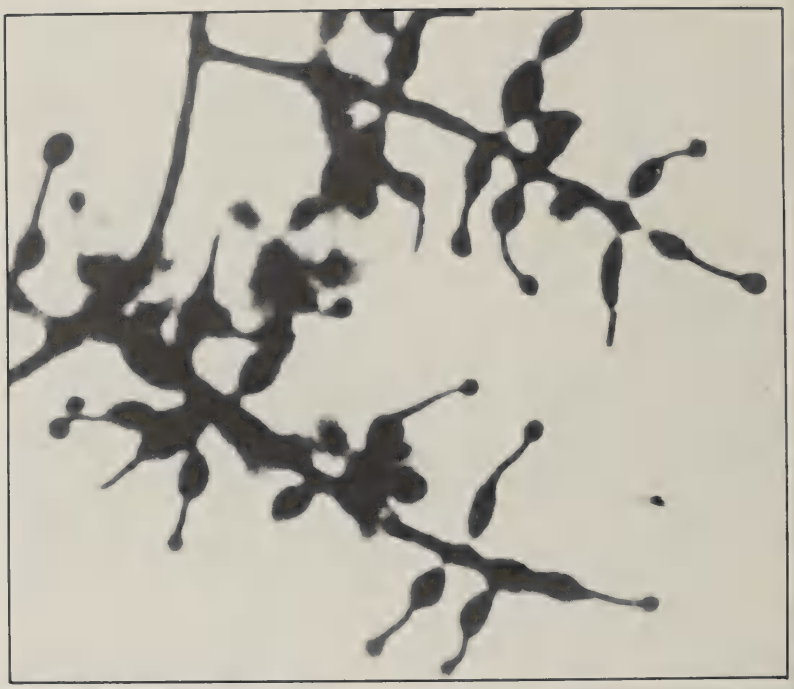
Until a few years ago, the risk of a fatal infection following a heart transplant was so great that many surgeons stopped performing the procedure.

Drugs to keep the heart working without spurring rejection by the body's immune system had to be given in such large doses that they overwhelmed the patient's ability to fight off other diseases.

Cyclosporine, a new drug that is expected to gain Food and Drug Administration approval soon, has changed all of that.

Since going into experimental use in the United States in 1979, cyclosporine has improved dramatically the survival of heart transplant patients, says Dr. Eric A. Rose, heart surgeon and director of the Cardiac Transplant Service at The Presbyterian Hospital.

Researchers for a Swiss drug company unearthed the substance, which is produced by a fungus, when they tested soil samples from Wisconsin and Norway.



Courtesy Sandoz Pharmaceuticals

The fungus from which cyclosporine originates.

CYCLOSPORINE FAILED TESTS AS AN ANTIBIOTIC

After the substance failed to make the grade as an antibiotic, the drug manufacturer's microbiologists continued their tests. They found that cyclosporine suppressed the immune reaction that causes rejection of an organ — without shutting down the body's defenses against other diseases.

"We don't know exactly how cyclosporine prevents rejection," says Dr. Rose.

Scientists have theorized that the drug interferes with the chain of command in the body's immune system without suppressing the antibodies that protect against infection. Two sets of white blood cells act together to destroy a transplanted organ: "helper" cells, which issue the signal to attack, and "killer" cells, which receive the signal and attack the organ. Cyclosporine appears to prevent destruction of the new organ by blocking the signal from the "helpers" to the "killers."

Since the Hospital started using the drug in early March, eight heart transplant patients at PH have been treated with cyclosporine.

The discovery of cyclosporine has made high doses of drugs previously used unnecessary. Cyclosporine also has helped reduce the length of stay in the hospital. The last two heart transplant patients here were released within four weeks, in contrast to the three- and four-month stays once necessary.

However, once a transplant patient begins taking cyclosporine, he must stay on the drug for the rest of his life. The long-range side effects of the drug remain unknown. Such short-term problems as exaggerated hair growth, high blood pressure, kidney failure and occasionally, cancerous soft-tissue tumors, render the drug less than ideal.

DRUG LEVEL IS MONITORED TO COUNTERACT ANY SIDE EFFECTS

"We can counteract the side effects by carefully monitoring the amount of the drug in the bloodstream. Cyclosporine is not a panacea in the treatment of transplant patients, but at present it is the most effective drug we have to prevent rejection and lower the risk of infection," says Dr. Rose.

A patient on cyclosporine faces a pharmacy bill of up to $6,000 a year. "But, the cost of hospital care for a patient with end-stage heart disease is considerably higher and without transplantation, death is certain," says Dr. Rose.

NEWSBRIEFS

PH AUXILIARY CELEBRATES ITS 75th ANNIVERSARY

During a recent luncheon celebrating the 75th anniversary of the Presbyterian Hospital Auxiliary, Dr. Felix E. Demartini, Hospital president, greeted many of the auxiliary's past presidents. Seated, from left, are: Lois Boots, Jane Todd, Margaret DeVoe and Katharine Southworth. Standing, from left, are: Dr. Demartini, Constance Carden, Anne Cabot, Barbara Vosburgh, Frances Munnell and Tina Lignon.

New auxiliary officers for the 1983-85 term are: Deirdre Williams, president; Tina Kister, first vice president; Irene Slap, second vice president; Sylvia Talmage, third vice president; Mary Campbell, treasurer; Connie Robert, secretary, and Patricia Tyson, corresponding secretary. ■

THREE SENIOR PHYSICIANS RETIRE FROM PH

Dr. Lester Mount, at left, Dr. Eli S. Goldensohn, center, and Dr. Richard L. Masland during a retirement party given in their honor at the Faculty Club. Dr. Mount served as an attending neurosurgeon in the Neurosurgery Service for 45 years. Dr. Goldensohn, of the Neurology Service, also was director of the Electroencephalography Laboratory. Dr. Masland was director of the Neurology Service from 1968 to 1978. ■

IN MEMORIAM

DR. HYMIE L. NOSSEL

Dr. Hymie L. Nossel, attending physician in The Presbyterian Hospital's Medical Service, died October 9. He was 53 years old.

Dr. Nossel was born on July 11, 1930. He began his medical career in his native South Africa at the University of Cape Town, where he received an M.B., Ch.B. in 1953. He became a fellow at the College of Physicians of South Africa in 1958. Two years later, he became a member of the Royal College of Physicians in London, where he was named a fellow in 1980. Dr. Nossel received his D. Phil. from the University of Oxford in 1962.

He was on the staff of major hospitals throughout the world, and joined The Presbyterian Hospital in 1966. He remained on the Hospital staff until his death. He was renowned for his work in the treatment and prevention of thrombosis.

Dr. Nossel was a professor and a noted researcher with the Columbia University College of Physicians & Surgeons. He was a pioneer in research of the mechanisms of blood coagulation.

Dr. Nossel is survived by his wife, Dr. Renee Abt, and three children. ■

SHULAMITH KASTEIN

Shulamith Kastein, 80, former director of the Speech and Hearing Department at The Presbyterian Hospital, died on July 20.

Mrs. Kastein graduated from the University of Vienna in 1929.

Mrs. Kastein joined the Hospital staff as a speech-language pathologist in 1948. She was appointed director of Speech and Hearing in 1958, a position she held until her retirement in 1968.

Mrs. Kastein, the author of several books, including "The Birth of Language," was one of the first to describe the various types of language and learning disabilities that occur in children, and to propose appropriate treatment plans. In 1981, the New York City Speech, Hearing and Language Association presented her with its first professional achievement award.

Mrs. Kastein is survived by her son and three grandchildren. ■

The Presbyterian Hospital
In the City of New York
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STETHOSCOPE

CANCER: THE BATTLE CONTINUES **JANUARY 1984**

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ABOUT THE COVER

Susan Calkins, R.N., assistant head nurse at The Presbyterian Hospital's new Ambulatory Cancer Center, prepares chemotherapy drugs for administration to an outpatient.

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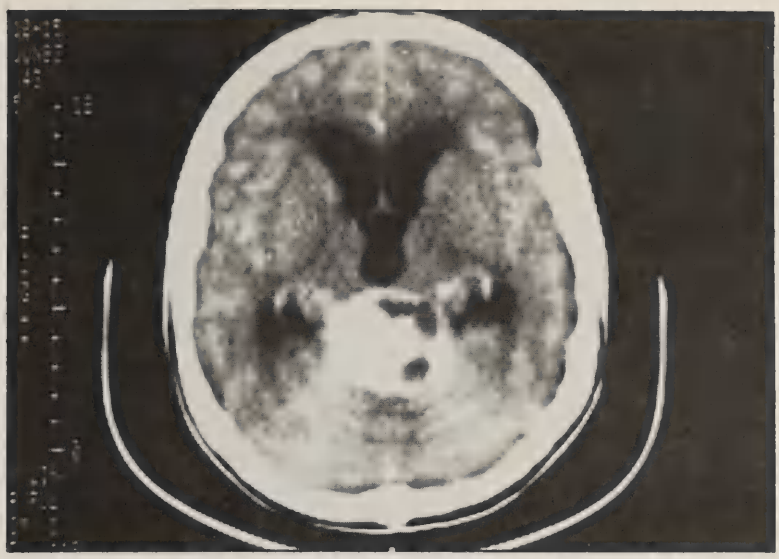
CANCER: PH PHYSICIANS TACKLE MANKIND'S MOST THREATENING DISEASE



CT scan shows a large tumor deep within the brain.

Medical knowledge of cancer dates back to the Egyptians. As early as 180 A.D., a Greek physician used heat treatment to remove a cancer of the breast. Two thousand years later, the cause and the cure for cancer remain elusive.

For centuries, surgery was the only way to treat cancer. Today, it still is the leading treatment when a tumor is present. Radiation therapy, used since the early 20th century, and chemotherapy drugs, which came into use in the late 1940s, also have been mainstays in the battle against cancer.

Over the last decade, innovative technology has helped doctors to look inside the body for signs of cancer by creating instant pictures of various organs. New treatments are available, including the planting of radioactive "seeds" in the cancerous area that destroy the malignancy over a period of time.

Other medical weapons being used or studied in cancer patients at The Presbyterian Hospital are:

- Laser therapy, in which a powerful beam of light is used to destroy a tumor or pre-cancerous growth.
- Monoclonal antibodies, which can seek out and destroy specific malignant cells within the normal tissue.
- Immunotherapy, which uses the body's own disease-fighting system to kill the cancer without harming the patient's normal tissue.

Researchers at the Columbia-Presbyterian Medical Center — one of only two Comprehensive Cancer Centers in New York City designated by the federal government — are asking basic scientific questions about what happens within a cell that might have a role in the formation of cancer.

Cancer often is thought of as one disease. In fact, it is a large group of diseases, any of which can invade normal tissue and grow uncontrollably throughout the body.

Most cells in the body constantly die and replace themselves. Every 16 hours, on average, the genetic material in damaged tissue is repaired and replaced.

When a change occurs in the genetic message that controls cell replacement, the cell may grow and replicate abnormally. As a result, each new cell sends out more faulty messages. Cell division may continue until the entire affected area becomes a mass of tumor that neither accepts nor transmits messages from the cells around it.

If malignant tissue is detected and diagnosed early, the likelihood of cure is good. Doctors at The Presbyterian Hospital have many forms of advanced treatment that can help patients whose disease has progressed. They also are beginning to use newly developed tests that can indicate whether any cancer-causing changes have occurred in a patient if they suspect that a tumor may be present. *continued on next page*

NEW LASER TREATMENT FOR EYE CANCER IS INTRODUCED BY PRESBYTERIAN

Physicians from The Presbyterian Hospital were the first in the world to treat eye cancer with a new experimental technique called photoradiation therapy. The advance is one of the first new treatments of cancer of the eye in nearly three decades.

Eye surgeons who employ this therapy use chemicals and a special red dye laser to detect and destroy the tumor.

Three days before the patient receives the laser treatment, he is injected with a chemical which collects in cancerous tissue. By the third day, the body's normal tissues have expelled the chemical. When the red dye laser is turned on, it quickly detects the chemical and destroys the tumor.

The laser is channeled to the tumor through a bundle of fiber optic strands, similar to those used in newer telephone cables, which surround the tumor and allow it to be attacked from several directions at once.

Dr. Francis A. L'Esperance Jr., associate attending ophthalmologist, was the first eye surgeon to use this technique to treat a patient with a malignant melanoma. To date, the treatment appears extremely promising.

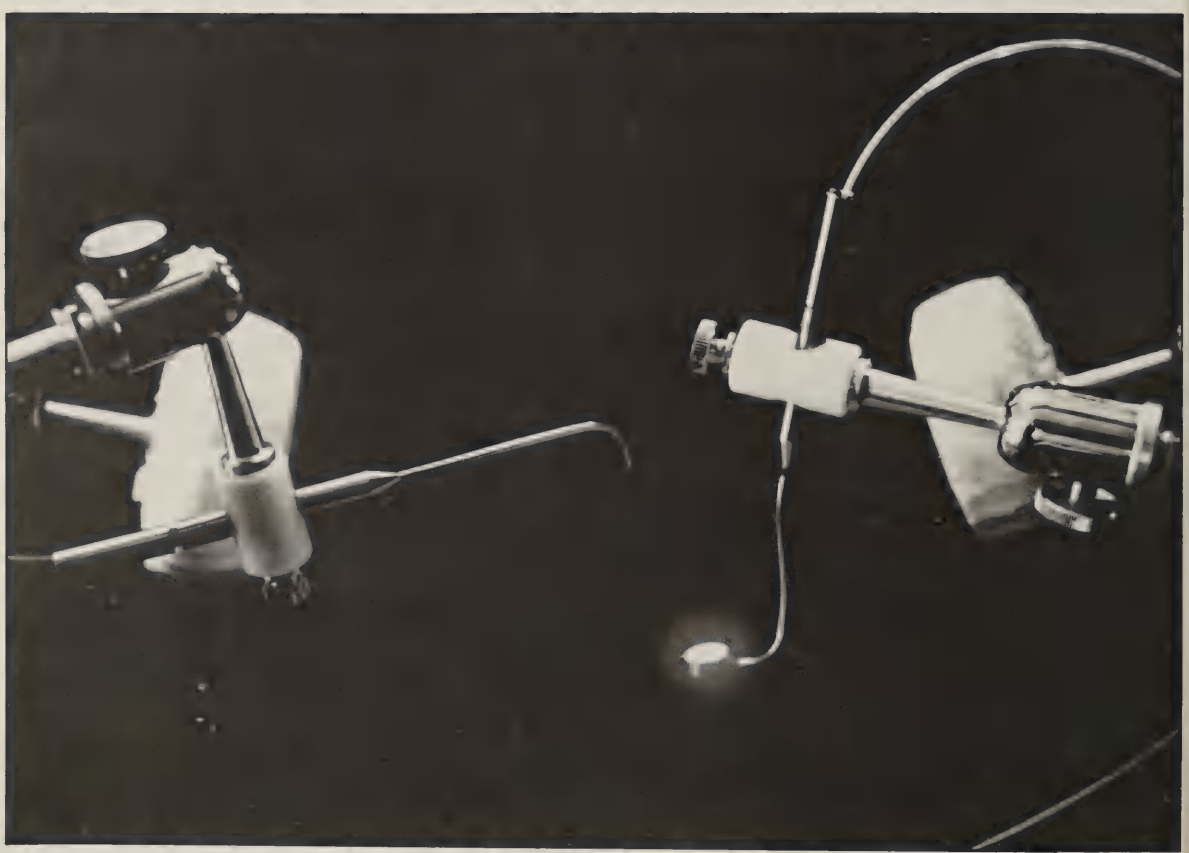
PRE-CANCEROUS GROWTHS ATTACKED BY LASERS

Lasers, which can send powerful pulses of light of various wavelengths into tissue, also are being used to treat pre-cancerous growths of the mouth and the cervix.

For the past three years, physicians have been using lasers to remove pre-cancerous growths in the oral cavity.

"We don't know how long it takes these growths to convert to cancer. In many cases we've treated, there either has been no conversion to cancer or no regrowth. With such encouraging results, we may use lasers

Fiber optic probes used in the treatment of eye tumors with the unique red dye laser.



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Dr. Ricardo Mesa-Tejada puts blood samples incubated with monoclonal antibodies into a gamma counter to detect the presence of breast tumor markers.

more in the future to prevent cancer," says Dr. Andrew Blitzer, director of the Division of Head and Neck Surgery in the Otolaryngology Service.

When cancer originates in the nose and sinuses, or in the oral cavity, it can encroach into many parts of the face and skull.

"When cancer of the head and neck is advanced, the surgical cure rate is poor. In these cases, we have instituted a team approach with other specialists combining radiotherapy, chemotherapy and surgery to try to increase the cure rate. The major advances in head and neck surgery have been in reconstructing and rehabilitating the patient," says Dr. Blitzer.

Surgeons remove skin and muscle from the chest or back that is most compatible with the color, texture and thickness of facial skin, and rebuild a patient's face.

"It takes a lot of innovative thought. Planning the reconstruction is the most complex part. We not only create a mouth to eat and lips to speak, but we also attempt to rebuild the entire face for social reasons," says Dr. Blitzer.

GYNECOLOGISTS USE LASERS TO REMOVE PRE-CANCEROUS GROWTHS

Gynecologists at PH use a carbon dioxide laser to remove venereal warts and pre-cancerous growths in the genital area.

"After we determine by a Pap test that pre-cancerous tissue exists, we either can freeze the area or use the laser to remove it," says Dr. Richard U. Levine, assistant attending gynecologist. "The laser destroys less of the normal tissue around the pre-cancerous spot than other methods," he explains.

Researchers at CPMC are studying the role of the venereal wart virus and whether it is a sexually transmitted problem.

"We hope to be able to recognize which wart is insignificant and which one will go on to become cancerous," says Dr. Levine.

The Hospital is a New York State regional screening center for women whose mothers took the hormone DES (diethylstilbestrol) between the late 1940s and 1970. DES has been associated with vaginal cancer in the daughters of women who took the hormone.

"We've found a large number of women with benign changes, but the great significance of the screenings has been the discovery that these DES daughters have had increased miscarriages and premature births," says Dr. Levine.

MONOCLONAL ANTIBODIES SHOW PROMISE IN BREAST CANCER TREATMENT

Surgery is the primary treatment for breast cancer and often is used in combination with radiotherapy, says Dr. Paul LoGerfo, director of Surgical

continued on next page

Oncology in the Surgical Service at PH.

In the past, surgeons removed the entire breast when cancer was suspected. Now, in some cases, they remove only the lump. When only a portion of breast tissue is removed, the patient also receives radiotherapy and very careful follow-up care.

Monoclonal antibodies are undergoing clinical trials in the diagnosis of breast cancer, says Dr. Ricardo Mesa-Tejada, associate attending pathologist.

"The monoclonals are useful in determining whether a tumor is in the breast or not. Tumors shed antigens, or markers, into the bloodstream. If we can detect these biochemical markers that tumors emit into the blood, we may be able to predict more accurately the behavior of a tumor, however small," says Dr. Mesa-Tejada.

"We hope that we will be able to zero in on tumors that are likely to take an aggressive course and possibly be fatal to the patient," he says.

When a mastectomy is necessary, plastic surgeons at PH can reconstruct the breast with special techniques that use skin and muscle from the other parts of the body. In some cases, this is done immediately following the mastectomy by a separate team of plastic surgeons.

REHABILITATION PROGRAMS TAILORED TO CANCER PATIENTS' NEEDS

Women who have undergone mastectomies are encouraged to participate in a special program sponsored by the Rehabilitation Medicine Service.

"The women often fear that the arm and hand shouldn't be moved during the recovery period. We teach them that if they don't move, fluids can stagnate and cause swelling and even their joints become unnecessarily stiff," says Dr. Erwin Gonzalez, attending physiatrist and director of the Amputee Service.

Programs to help keep cancer patients in the best possible physical condition are an important part of care, says Dr. Gonzalez.

"Through rehabilitation therapy, we try to prevent further weakness. When a patient is confined to bed, he can become deconditioned and recovery can take twice as long. Our approach is simple — by getting patients to walk, and to perform simple exercises, we can help them to maintain their cardiovascular condition and encourage the movement of all the major joints. It is very easy for a cancer patient whose leg has been amputated to become bedbound and sink into further disability as his muscles weaken and atrophy."

BONE REPLACEMENT CAN SAVE THE LEGS OF SOME CANCER PATIENTS

When bone cancer strikes, it often settles into the leg In some patients with tumors of the femur (the large bone in the lower leg), orthopedic surgeons can remove the section of bone that contains the tumor and replace it with donor bone.

"We leave the patient's knee joint, ankle joint and foot in place. By trading off a loss of part of the femur, we can maintain normal movement," says Dr. Harold M. Dick, acting director of the Orthopedic Surgery Service.

After the donor bone is in place, the patient receives chemotherapy. Because donor bone tends to deteriorate, the section may have to be replaced. In some cases, sections of living bone from the opposite leg (the tibia) are used.

MYELOMA IS A COMMON FORM OF BONE CANCER

Myeloma, a cancer of the blood cells that make antibodies — the substances the body uses to fight disease — now is the most common malignancy of the tissues that form blood. This disease can be present for years without symptoms, eventually damaging the bones and bone marrow.

PH is one of the leading centers in the world for treatment of myeloma, says Dr. Elliott F. Osserman, attending physician and director of the Immunoglobulin Laboratory.

The use of interferon, a protein which the cells produce as protection when confronted with a virus, apparently has some anti-tumor effect in myeloma.

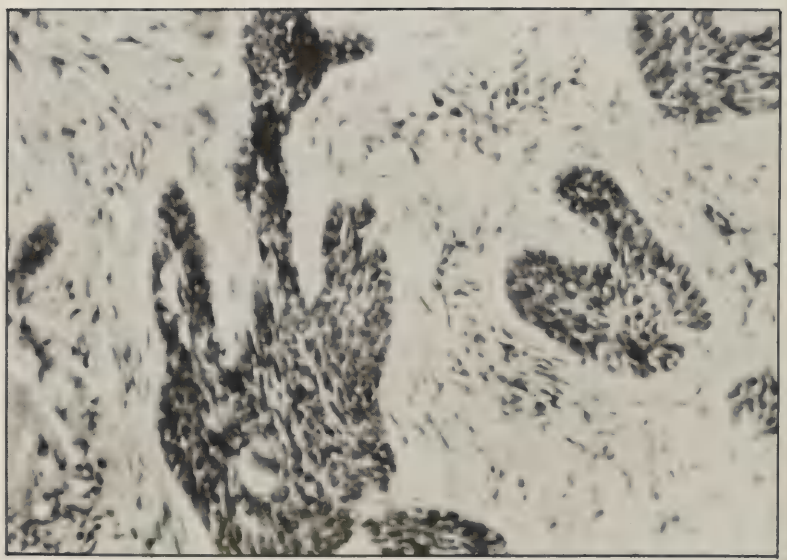
A cooperative study of interferon with three other hospitals has shown that this substance can be helpful to some myeloma patients, he says.

"It's a whole new approach to cancer treatment. We still don't know how interferon actually works," says Dr. Osserman.

SKIN CANCER IS THE MOST COMMONLY OCCURRING CANCER

Skin cancer is the most common cancer in the body. Each year, more than 500,000 new cases occur.

When a dermatologic surgeon removes a tumor, he must decide how much of the surrounding and underlying area must be taken out to remove fully the malignancy.



A microscopic view of a section of skin which has been invaded by basal cell carcinoma. After Mohs chemosurgery is performed, all remnants of the tumor are gone.

Frieda Karp, senior research worker, adjusts the flow cytometer which checks the DNA content of cells.

The extent of tumor growth usually can be estimated by clinical observation. However, some varieties of skin cancer have unpredictable growth patterns. These tumors are more aggressive and tend to recur after conventional surgical treatments.

"To help ensure the complete removal of the cancerous area in these difficult cases, we use a technique called Mohs chemosurgery," says Dr. Yehuda Eliezri, associate attending dermatologist.

The tissue removed is thoroughly studied under the microscope to detect any remaining cancer. Areas of tumor are located on a map of the wound. Guided by these graphic indicators, the surgeon can remove any remaining cancer cells. This procedure is repeated until the tumor is removed completely.

"In this way, we can offer a combination of conservation of unaffected skin with complete cancer removal and cure," says Dr. Eliezri.

UROLOGISTS USE SPECIAL SURGERY TO SALVAGE PART OF A KIDNEY

When cancer invades the kidney, the only cure is surgery, says Dr. Carl Olsson, director of the Urology Service.

"However, we have developed techniques which allow us to remove the diseased part of the kidney and save the rest," he says. "A patient can function well on one-third of a kidney and avoid a lifetime on dialysis."

Cancer of the prostate is the second most common cause of cancer deaths in men. Bladder cancer is also common.

"We use flow cytometry, an automated method of measuring the DNA, or genetic material, in cancer cells. The more DNA in the cell, the more likely the prostate or bladder cancer is to spread," says Dr. Ralph deVere White, director of Urological Oncology at PH. "This test, plus an examination of the patient's pelvic lymph nodes, allows us to assess more accurately how the patient will respond to therapy."

With analysis of cells in the urine or a fine needle biopsy of prostate cells, doctors can screen for cancer of these organs in most patients without the need for expensive inpatient testing.

"In patients where prostatic cancer has spread and fails to respond to therapy, we now are using drugs which have been shown to sensitize cancer cells for killing by chemotherapy," says Dr. deVere White.

NEW TESTS, USE OF IMMUNOTHERAPY TREATMENT ARE BEGUN AT CPMC

Tests to detect recurrent thyroid cancer that have become a world standard were developed by researchers at CPMC.

If a certain protein made by the thyroid is present in a blood test, it implies that the patient has a recurring malignancy. This test, first used here in 1977, almost totally has replaced routine body scans to detect thyroid cancer.

The Presbyterian Hospital is the only hospital to treat thyroid cancer with a form of immunotherapy. With this treatment, doctors create in a patient an autoimmune thyroiditis — an allergic reaction by the patient to his own thyroid gland. The reaction is created by injecting into patients with thyroid cancer material from normal thyroids that have been chemically altered.

continued on next page

Dr. Michael R. Fetell examines CT scans of a rare type of tumor found deep inside the brain.

"The patient develops an allergic reaction to his own thyroid, and to his own thyroid cancer, which helps control the disease. We've had a positive response in half the patients we've treated with this method," says Surgical Oncology director Dr. Paul LoGerfo.

NEUROLOGISTS HARNESS THE IMMUNE SYSTEM TO ATTACK BRAIN CANCER

For patients with glioblastomas, a cancer of the brain, doctors at PH are trying to get the patients' immune systems to work against the tumor.

"We've treated a patient with a 'vaccine' consisting of tumor cells coated with chemicals which help stimulate a specific immune response against the tumor. Immunotherapy began after surgery and radiotherapy. The patient now is going into remission. The results of the treatment await long-term follow-up," says Dr. Arnold E. Eggers, assistant attending neurologist.

Immunotherapy has been attempted as a treatment in the past, with unsuccessful results, says Dr. Eggers. "If we can harness this approach against brain cancer, it could have potential uses in killing other tumors."

Children, as well as adults with brain tumors are referred to the Hospital for treatment from medical centers throughout the world.

NEUROLOGISTS AND NEUROSURGEONS TEAM UP IN BRAIN CANCER TREATMENT

The Neurology and Neurosurgery Services work together to evaluate and treat patients with brain tumors. For the past two years, Dr. Bennett M. Stein, director of the Neurological Surgery Service, and Dr. Michael R. Fetell, director of the Clinical Neurooncology Unit in the Neurology Service, have been collaborating in a study of patients who have tumors located deep in the brain, in the region of the pineal gland. The goal of this program is to administer a specific type of therapy, depending upon the type of tumor each patient has.

"These are rare tumors, but they are very important since many patients, even those with malignant tumors, may be cured," says Dr. Stein.

"Until the 1970s, it was thought that surgery in this region was too dangerous, and all patients received radiation therapy."

However, Dr. Stein pioneered a special neurosurgical approach and techniques to reach the pineal region and remove the tumor. "Now we have the ability to remove tumors completely by surgery. This allows us to spare patients with benign tumors from postoperative radiotherapy," says Dr. Stein.

"We are finding a far wider variety of tumors in the pineal region than had been suspected. Many tumors in this region are similar to tumors of the testes or ovaries and can be treated with chemotherapy," says Dr. Fetell.

Unlike other brain tumors, pineal region tumors are not protected by a "blood brain barrier," a protective mechanism in the brain that bars chemotherapy drugs from passing into normal brain tissue.

"We also are analyzing spinal fluid markers to try to develop methods to determine tumor type prior to surgery.

When we can do this, we will be able to avoid surgery in those patients who benefit from chemotherapy or radiotherapy, and we will be able to follow patients' responses to therapy better," says Dr. Fetell.

NEW CHEMOTHERAPY COMBINATION SHOWS PROMISE IN LUNG CANCER

Up until a few years ago, it was felt that chemotherapy didn't work on many types of lung cancer. Research at CPMC and at other major centers now has shown that chemotherapy can be effective. At PH, doctors use a two-drug chemotherapy combination, which has produced good results in many patients, when followed by radiation therapy.

In some cases, doctors have converted tumors that were considered inoperable into operable ones. "Chemotherapy and radiation therapy make the tumor shrink and then surgeons can operate," says Dr. Mark B. Stoopler, assistant attending physician in the Medical Service.

"Occasionally, it even has been possible to remove just a section of the lung instead of the entire lung," says Dr. Alfred Jaretzki III, associate attending surgeon in the Surgical Service.

Dr. Mark B. Stoopler inspects X-rays. The film on the left shows a fist-sized tumor in the upper right part of the lung, which was reduced to an operable size (X-ray at right).

PROGRESS REPORTED IN TREATMENT OF YOUNG CANCER PATIENTS

"We're making great progress in the treatment of children's cancer. In some forms of leukemia, the cure rate approaches 90 percent," says Dr. Anneliese Sitarz, attending pediatrician.

Although some cases requiring complex management only can be treated effectively on an inpatient basis, other young patients receive treatment at a pediatric "day hospital." (See story on page 9).

The Presbyterian Hospital, a pioneer in the treatment of a tumor of the kidney, known as Wilms' tumor, has a 90 percent cure rate for this disease. "We have made slow but steady progress in oncology," says Dr. Sergio Piomelli, director of the Division of Pediatric Hematology/Oncology. "Although we haven't made quantum leaps, our ability to manage cancer has improved dramatically."

The Babies Hospital division of PH is part of a collection of 26 major centers which make up the Children's Cancer Study Group. "The member hospitals decide upon the best way to treat certain tumors based on our pooled experience in treating these cancers — some of which are exceedingly rare," says Dr. Piomelli.

EASING THE PAIN OF CANCER CAN ADD TO THE QUALITY OF LIFE

The pain that accompanies cancer can be intolerable, but regular administration of narcotics to help ease a patient's suffering can cause addiction and withdrawal problems, as well as depression, sleepiness, constipation, confusion and loss of appetite.

The Pain Treatment Service at the Hospital often is summoned to help cancer patients. "Usually, we're called in late to offer pain relief. Ideally, the pain treatment service should be called in early — as soon as the diagnosis is made," says Dr. David M. Richlin, an anesthesiologist who is co-director of the service.

"We can offer a battery of different types of therapy, which range from pain killers to nerve blocks of the affected area of the body," says anesthesiologist Dr. Leonard Brand, Pain Treatment Service co-director.

When the service evaluates drugs for cancer patients, they look for drugs that will bring relief, not oblivion. "When we are faced with a patient in severe pain, our goal is to give him his mind back — to allow him to exist with his pain as a human being," explains Dr. Brand.

Dr. Richlin adds that "if we can convert a bed-ridden patient into someone who can spend most of his time at home with improved morale, then the financial burden of his care in the hospital is eliminated."

PSYCHIATRISTS PLAY A SUPPORTING ROLE IN CANCER PATIENTS' CARE

All cancer patients are under stress. "For each one, the illness has a different meaning," says Dr. Sherry Katz-Bearnot, attending psychiatrist in the Consultation-Liaison Division of the Psychiatric Service.

"Most patients cope well. They have a sense of hopefulness. It is the rare person who has a lot of difficulty. If one does, we can recommend psychotherapy or medication in consultation with the medical staff," she explains.

In working with cancer patients, the psychiatric staff plays a supporting role. Each patient is screened by a social worker, as well as the nursing and house staffs. Strong family, friendship and religious ties are all important supports for patients. It's rare for a patient to need psychological help and not admit it. When this does happen, the staff will pick up signals from the patient, says Dr. Katz-Bearnot.

SCIENTIFIC ADVANCES BENEFIT CANCER PATIENTS

The medical staff at CPMC hold joint appointments at the Hospital, where patients receive care and at Columbia University's College of Physicians & Surgeons, where cancer research is conducted. This link allows patients to benefit from state-of-the-art research achievements developed here.

OUTPATIENT CENTER ALLOWS CANCER PATIENTS TO LEAD NEAR-NORMAL LIFESTYLES

Kathy Andersen, R.N., assistant head nurse at the Ambulatory Cancer Center, administers a platelet transfusion for outpatient Isaura Sircus.

Medical technologist Lisa Shakes runs a computerized blood analyzer that gives the number of red and white blood cells and the platelet count of cancer patients.

The experts who have made the Columbia-Presbyterian Medical Center a world-renowned institution work in a city within a city spread over a score of buildings on 32 acres. Much of the expertise which has made the Medical Center one of 21 comprehensive cancer centers in the United States, and one of only two in New York City, now is concentrated in The Presbyterian Hospital's new Ambulatory Cancer Center. The Center is designed to keep the care of cancer patients up-to-date, efficient, and above all, as convenient for patients as possible.

About 1,000 cancer patients now receive all aspects of their care, from chemotherapy to blood sample analysis and follow-up, at the same location.

"By receiving this much of their care as outpatients, these people avoid a significant amount of hospitalization," says Dr. Rose Ruth Ellison, Chief of the Division of Oncology within The Presbyterian Hospital's Medical Service, and a clinical researcher at Columbia University's College of Physicians & Surgeons. "Our aim is to treat people for cancer, while disrupting their lives as little as possible."

"In the past, for example, patients had to travel to different parts of the Hospital for their blood tests, then go back to the clinic or their doctor's office and wait up to an hour and a half for the results before their treatment could be started," explains Dr. Ellison. "We have a complete hematology lab right here, and can have test results back in 15 minutes. The patient never has to leave the floor. Both clinic and private patients are seen at the Center."

The Center has 10 treatment stations in a modern setting, 12 examining rooms, a patient care station, office space where researchers can collect and analyze data, a complete hematology laboratory, a business office, and even a lounge with a small kitchen for patients and their families.

The facilities, however, are only a small part of a successful treatment program. "Most of the major advances made in cancer have been the result of the cooperative efforts of specialists from many fields. Our goal is to bring together on this floor an interdisciplinary service. Soon, we hope to have specialists in psychiatry, radiotherapy, gynecology, general surgery and urology working together here. By bringing them together, there is much greater access to formal and informal consultations, and this kind of interaction leads to better care and better clinical research," says Dr. Ellison.

In addition to the center's complement of doctors, there is a staff of 18, including oncology nurses, social workers, lab technicians, researchers, registrars and receptionists.

Social Work Services Coordinator Marlene Cooper says, "Social work services are available to these patients and their families to help them deal with the stresses of living with their disease."

"We have as supportive and dedicated a staff as I've ever seen," says Evelyn Lieb, Acting Administrative Coordinator of the Center. "They really care, and take the time to know their patients."

Kathy Andersen, R.N., assistant head nurse at the Center, says, "Over here, patients get the best care possible. Patients come here to receive chemotherapy and they can maintain their normal, active lifestyles. Oncology patients are very special people. Their ideals and outlook on life can teach everyone how precious it is to be alive."

"DAY HOSPITAL" EASES THE BURDEN OF CHILDHOOD CANCER

Patricia Haugh fights with her brothers on an all too regular basis, does her best to dodge homework, and worries her mother as only a 7-year-old can. In fact, only her weekly trips to The Presbyterian Hospital, where she is being treated for leukemia, distinguish Patricia from other children her age.

The National Cancer Institute reports that each year 6,000 children develop cancer. However, the outlook for these young patients is growing brighter. New treatments have brought the cure rate for many types of childhood cancer, including some types of leukemia, to more than 90 percent.

Patricia is part of a program "designed to make the treatment of childhood cancer as easy as possible on both patients and their parents," says Dr. Sergio Piomelli, director of PH's Division of Pediatric Hematology/Oncology.

"We feel that the less time a child has to stay in the hospital, the better off that child will be," he says. So, in July 1979, the Pediatric Service established a "day hospital" for children at Presbyterian's Babies Hospital division in its Center for Women and Children. The "day hospital" for children is one of five such centers in New York City.

Patricia Haugh brings her friend Berty along during her weekly visits to the "day hospital."

EFFECTIVE TREATMENT FOR PATIENTS WITHOUT HOSPITALIZATION

About 180 of the Hospital's patients are like Patricia. Though they are seriously ill with diseases ranging from cancer to sickle cell anemia and thalassemia, they don't have to be hospitalized for weeks or months for their treatments to be effective.

Instead, the young patients visit the "day hospital" from three times a week to once a month to receive treatments and have tests — thus their progress can be monitored by their doctors in a relatively unintrusive manner.

PATIENT VISIT MAY LAST 10 MINUTES OR ALL DAY

The 150 patient visits to the "day hospital" each week may be as short as 10 minutes for a blood test, or may last all day. But, when the treatments are over, the patients can get on with their regular activities at home.

When the patients go home, some members of their treatment teams go with them: their parents.

"I help out on all of her treatments," says Patricia's mother, Alice. At home, Mrs. Haugh administers oral medications which are helping to keep her daughter well.

On occasion, Patricia must spend the night at the Hospital. "When she checks in, I check in," says Mrs. Haugh. "The staff encourages parents to be in on all of the treatments. It's better for Patricia because it gives her some security."

"DAY HOSPITAL" TEAM IS ALWAYS AVAILABLE TO HELP

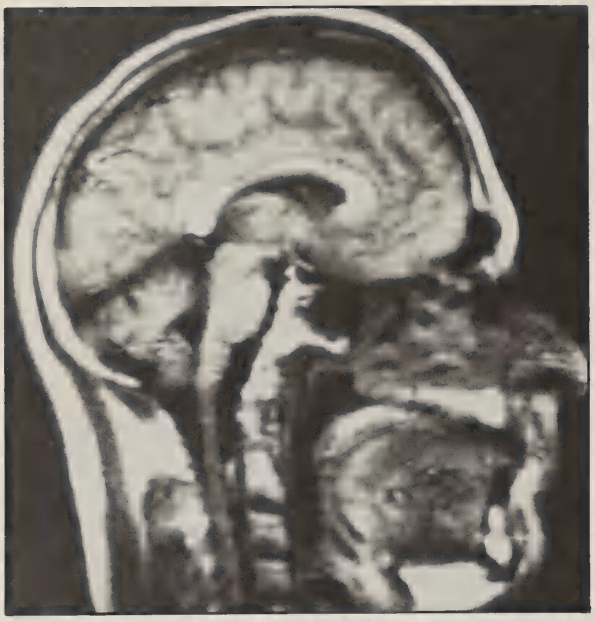
Mrs. Haugh herself feels more at ease knowing that a team of seven doctors, nurses and social workers is available around the clock to answer questions, provide emotional support, and, if necessary, admit Patricia to the Hospital.

"Last year she had chicken pox, which can be very dangerous for a child on chemotherapy," says Mrs. Haugh. "We were on the phone with the Hospital three times a day. They even called to say goodnight to my sweetheart."

Patricia has been coming to the "day hospital" for two years, but she has another year of treatment ahead of her, says Dr. William Gerba, her hematologist/oncologist. "She's doing quite well. But, we don't start to talk about cure until a patient has been in remission for five years."

Mrs. Haugh looks forward to the day when Patricia will be well enough to take a family vacation to Ireland, where her grandmother lives. Convincing Patricia to make the trip, however, may not be easy. "She loves coming here to the Hospital. The staff makes a fuss over her, and they treat her so well. Last year, she liked to come here more than she liked going to school."

RADIOLOGISTS USE NEW TECHNOLOGY TO PINPOINT CANCER IN ITS EARLY STAGES



Above: An NMR scan of hydrogen atoms in the head. Top right: CPMC's "multi-nuclear" NMR scanner. Lower right: Dr. Sadek Hilal evaluates a series of scans.

The ability to map the interior of the body from the outside has helped doctors to detect and diagnose various diseases and holds much promise for patients with cancer.

In the past, X-rays were the only way to photograph the inside of the body. X-ray films show the degree of transparency of the human body. Bone shows up as white because it is dense. Flesh and tissue emerge as grey and black because they are transparent to X-ray information obtained with this method. Often, large tumors went completely undetected because they were as transparent as the flesh around them.

"With the development of computerized tomography (CT) less than a decade ago, physicians have been able to make a more accurate picture of a particular region within the body," says Dr. Jeffrey Newhouse, director of body imaging in the Radiology Service at The Presbyterian Hospital.

"CT can find tumors that previously only could be detected by more invasive techniques," he notes.

Since the advent of CT, research at the Columbia-Presbyterian Medical Center has unveiled a device that may be even more sensitive in the detection and diagnosis of cancer: "multi-nuclear" magnetic resonance.

The world's first clinical "multi-nuclear" NMR scanner was introduced last year at CPMC. It is the first scanner that can show in image form, the shape and health of organs and their cellular components.

NMR devices use a strong magnetic field instead of radiation to produce an image of the body. A computer linked to the device measures signals emitted from the atoms within cells. This information then is displayed on a screen.

While conventional NMR scanners can show images of the atoms of hydrogen in the cells, the new scanner at CPMC is the only one in the world that can produce images of sodium or phosphorus, as well as individual compounds of hydrogen, such as water, fats and carbohydrates.

"This makes our dream of analyzing the chemical composition of the human body feasible, thus giving us answers we previously could obtain only under laboratory conditions," says Dr. Sadek Hilal, director of Neuroradiology.

"Phosphorus compounds are the fuel for the cell. It is possible that changes in the phosphorus levels of tumors may give us an idea of the speed at which a cancer cell is dividing," says Dr. Hilal. "A cell that is dividing abnormally produces compounds in different concentrations than normal tissue," he says.

Preliminary evidence in tests of the NMR scanner indicate that the device can detect phosphorus compounds in the human body within a one-hour testing period. "We have produced the first and only phosphorus images in the human body. Eventually, we hope to be able to see the entire spectrum of changes within cells. Right now, the technique offers us a very sensitive way to determine cell activity," says Dr. Hilal.

With NMR scanning, physicians can perform a chemical analysis of the human body point by point without invading the body.

"CT scanning allows us to detect only one parameter — the degree to which tissues absorb X-rays," says Dr. Hilal. "With NMR, we can get five pieces of information, including how much hydrogen, sodium or phosphorus is present in the cell, the environment within the cell and the amount of blood flow. The potential of this new technique in defining a medical problem is so much greater than any other diagnostic imaging test we've ever had."

CPMC SCIENTISTS STUDY THE CANCER AGENTS THAT SURROUND US

The first clue that substances in the environment can cause cancer was uncovered in 1775 when a British surgeon observed that men who worked as chimney sweeps suffered from cancer of the skin of the scrotum. Soot in the chimneys was the apparent cause, but it took scientists more than 150 years to isolate the culprit: a chemical called benzo(a)pyrene, which is dispersed into the atmosphere when fuel is burned and when cigarettes are lit.

Since then, researchers have identified more than 30 chemicals that are known to cause cancer in humans. Laboratory studies of these and other substances are under way at the Comprehensive Cancer Center and Institute of Cancer Research of Columbia University at Columbia-Presbyterian Medical Center. "Hundreds of chemicals have been found to cause cancer in laboratory models after repeated exposure," says Dr. I. Bernard Weinstein, attending physician in the Medical Service at The Presbyterian Hospital and director of the Division of Environmental Sciences at the Columbia University School of Public Health.

"Studies have shown that the majority of human cancer is due to environmental factors — diet, lifestyle and exposure to dangerous chemicals. Hereditary factors are responsible for less than 20 percent of all cancer cases," he says.

CPMC RESEARCHERS LEARN HOW CARCINOGENS BIND TO DNA

At CPMC, Dr. Weinstein, in collaboration with Dr. Regina Santella and Dr. Frederica Perera of the School of Public Health, has developed a method to detect how some carcinogens bind onto DNA — the genetic material in all cells. This analysis, called an "enzyme-linked immunoassay," can indicate whether any cancer-causing changes have occurred. It makes use of antibodies — invaders which seek out and attach to foreign substances in the body. In this case, the antibodies are designed to recognize carcinogens bound to DNA.

In 1983, a team of physicians and laboratory scientists at CPMC began to take tissue samples from some patients. Then they used this highly sensitive procedure to detect the presence of carcinogens.

"If there is no carcinogen on the DNA — the antibody won't bind. If a cancer-causing agent is present, the antibody lights up like a flashlight," says Dr. Weinstein. "We also can measure the amount of carcinogen that has bound onto the DNA and thus determine how much change has occurred in the cells."

CANCER DEVELOPS IN SEVERAL STAGES

Normally, when genetic material is damaged, enzymes remove the damaged part and repair it, using the old genetic material as a blueprint for the new cell. When a cancer-causing agent intrudes, it can produce changes that escape the DNA repair process and thus produce permanent changes in the DNA blueprint.

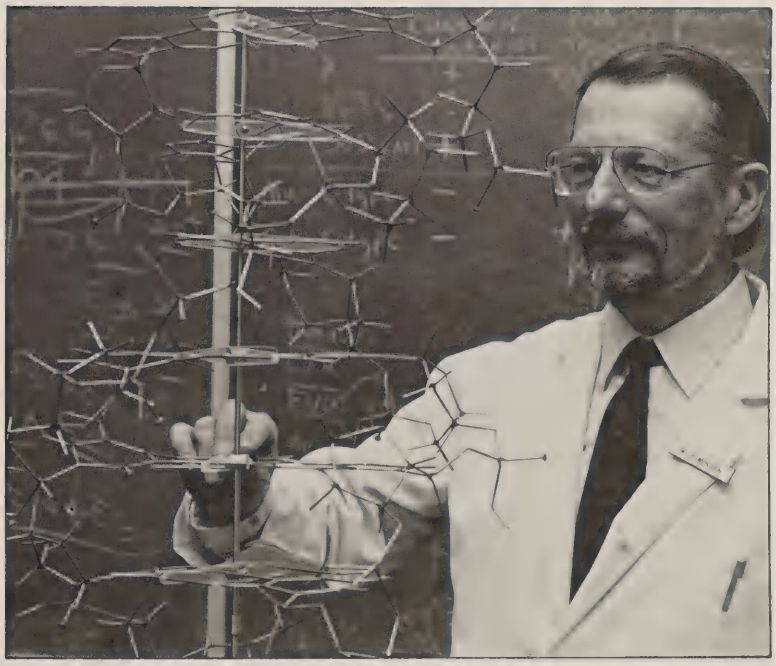
The formation of cancer is a multistep process that occurs over years or decades. A cigarette smoker or someone exposed to a hazardous substance in his workplace does not immediately get cancer.

"In the past, it was thought that if a person was exposed to a cancer-causing substance once, that this was sufficient to cause cancer," says Dr. Weinstein. "It now is known that a series of changes occurs in steps after repeated exposure to one or more chemicals, for example. Some of these changes may lead to cancer and others will be repaired by the body."

SUBSTANCES ARE RESPONSIBLE FOR STAGES OF CANCER DEVELOPMENT

A number of chemical and hormone-like substances, called tumor promoters, have been identified that are responsible for the later stages of cancer development. CPMC researchers have found that tumor promoters bind to certain components, termed "receptors," thus distorting the growth of cells and increasing the likelihood of their becoming malignant.

"Only now are we beginning to understand how carcinogens work, and we are developing laboratory tests to detect if cancer-causing substances are present in tissue and blood samples from patients. We call this new approach 'molecular epidemiology,' " says Dr. Weinstein. "In the future, these types of tests will help us understand why a patient has cancer and will provide powerful methods for cancer prevention and early detection, as well as suggest new strategies for cancer treatment."



Dr. I. Bernard Weinstein with a DNA sculpture in his office.

NEWSBRIEFS

REESE HOUSE IS A HOME AWAY FROM HOME FOR PATIENTS' FAMILIES

When a child with an eye tumor or another young patient needs treatment at The Presbyterian Hospital, the youngster's family can stay at the Hospital's Reese House.

The three-story townhouse with its Georgian-style facade is a cozy home away from home for families who want to be near when a young patient is undergoing treatment for a serious illness. The Reese House is a short two-block walk away from the Hospital.

Each year, the Reese House accommodates more than 50 families from all over the country and the world. "It makes it possible for these parents to be able to afford to stay near their children and makes it convenient for them to be with their children as often as necessary," says Dr. Ira Snow Jones, director of the Children's Eye Tumor Clinic at PH.

Reese House also welcomes patients from Pediatric Oncology/ Hematology and children with other illnesses.

LIKE LIVING AT HOME

"Parents find that staying at Reese House is like living in their own home. They have the run of the place — they can watch TV, or do their laundry at any time of the day or night. Linens are supplied. The only stipulation is that guests leave the house the way they found it," says Kathy Charton, administrative aide.

The first floor has a living room with a fireplace, television and stereo. On the second and third floors are single and double bedrooms, bathrooms, linen closets and a fully equipped kitchen. The basement contains a playroom complete with toys and a washer and dryer for families.

The Retinoblastoma Eye Fund operates and maintains Reese House. Support for the house is obtained solely by contributions. For additional information about the Reese House, write to Dr. Ira Snow Jones, Children's Eye Tumor Clinic, The Presbyterian Hospital, 622 West 168th Street, New York, N.Y. 10032.■

SCHOOL OF NURSING RECOGNIZES DECEMBER '83 GRADUATES

Thirty-eight students from the Edna McConnell Clark School of Nursing were honored at a recognition tea in December. Joan Kney, school director, at left, greeted the graduates. Martha E. Haber, vice president for Nursing, at right, presented nursing service awards to Obdulia Viruet, second from left, and Gayle Hoban. Ms. Viruet received a clinical performance award for her work in Obstetrics, Medical/Surgical and at the Eye Institute. Ms. Hoban was honored for her achievements in Pediatrics, Medical/Surgical and Psychiatry.

PH ALUMNI DIRECTORY WILL BE AVAILABLE IN 1985

Alumni of The Presbyterian Hospital will have a convenient and systematic way to keep track of friends and colleagues with the publication of the first PH Alumni Directory, scheduled for release early in 1985.

The directory, to be researched and compiled by the Harris Publishing Company and circulated among alumni only, will have four sections. The first will contain photographs and information on past and current programs at the Hospital. An alphabetical section with biographical listings for each alumnus will follow.

Individual entries will include: name, service, undergraduate and medical school data, specialty, position or academic title, hospital affiliation, office address and phone, and home address and phone.

The third section will list alumni by Hospital specialty service, and the last will index alumni geographically, along with their specialties.

Data for the directory will be obtained through brief questionnaires that will be mailed in the spring. Telephone verification will follow in the fall, at which time alumni will have an opportunity to order a personal copy of the directory.

The entire project will be undertaken at virtually no cost to PH since Harris Publishing plans to finance the directory through its sales to alumni. Although the Hospital will not benefit financially from sales, the institution and staff will derive substantial benefits from the completely updated alumni records and an expanded alumni program.

FOOTNOTES

MEDICINE: **Dr. Harold C. Neu,** chief of the Division of Infectious Diseases and Hospital epidemiologist, has been named the recipient of the 1983 Hoechst-Roussel Award for outstanding research in the field of antimicrobial chemotherapy.

NURSING: **Dora Duncga,** R.N., associate director of Eye, Medicine, Surgery Nursing for Harkness Pavilion and PH-4, was chosen to attend the 90th annual meeting of the Association of Surgeon Generals of the United States in San Antonio, Texas in November. Ms. Duncga was one of five panelists who was requested to discuss specific health issues with Lt. Gen. M.C. U.S.A. Surgeon General, U.S. Army, Bernhard Mittemeyer. The theme of the meeting was "Federal Health Care — The Initiatives and Challenges/A Shared Commitment."

Penelope Buschman Gemma, R.N., M.S., administrative nurse clinician, is co-author of *A Child Dies: A Portrait of Family Grief.*

Zola D. Golub, R.N., was selected as one of 30 participants of the Mead Johnson Perinatal/Neonatal Clinical Nurse Specialist symposium, held recently at Marco Island, Florida.

ORTHOPEDIC SURGERY: **Dr. C. Andrew L. Bassett,** attending orthopedic surgeon, gave guest lectures on "The Use of Pulsed Electromagnetic Fields in Tardy Bone Union" and "The Use of PEMFs in the Treatment of Osteonecrosis" at the annual meeting of the South Carolina Orthopedic Association.

PEDIATRICS: **Dr. L. Stanley James,** director of the Division of Perinatal Medicine, visited four hospitals in the People's Republic of China last fall at the invitation of the World Health Organization. During his tour, Dr. James visited hospitals in Beijing, Wuhan and Sian, where he reviewed progress in perinatal care and made recommendations. He also lectured on the entire spectrum of care of newborns, resuscitation and respiratory distress syndrome. Perinatology now is in the forefront of health care in China because of the government aim of one child per family, says Dr. James.

PSYCHIATRY: **Dr. Sidney Malitz,** chief of the Department of Biological Psychiatry, received the University of Health Sciences/Chicago Medical School's Distinguished Alumni Award for his work in clinical and research psychiatry.

Dr. David Shaffer, attending psychiatrist, has been awarded a four-year grant by the National Institute of Mental Health to undertake an epidemiological study of adolescent suicide and attempted suicide.

RADIOLOGY: **Dr. Walter E. Berdon,** director of Pediatric Radiology, was a guest speaker at a recent Society of Gastrointestinal Radiologists meeting in Southampton, Bermuda, where he presented a paper on "Esophageal and/or Hypopharyngeal Perforation: The Role of Cricopharyngeal Spasm." Dr. Berdon also recently presented a course on "Pediatric Uroradiology — Imaging in Obstruction" at the Society of Uroradiology's Scientific Program in San Francisco.

UROLOGY: **Dr. Carl Olsson,** director of the Urology Service, has announced the acquisition of new funding for investigations into urologic cancer and infertility. The American Cancer Society has awarded the Service nearly $200,000 for studies of steroid receptor interaction with DNA. The New York Academy of Medicine has awarded two separate Valentine Fellowship Awards of $25,000 each to Drs. Ihor Sawczuk and Eli Lizza for work on bladder oncogenes and epididymal physiology.

Dr. Ralph J. Veenema, attending urologist, was a member of a delegation of 18 urologists which visited the People's Republic of China. The delegation toured the medical schools and hospitals of six cities during its stay, participating in seminars and presenting papers on a variety of urological subjects.

Dr. John K. Lattimer, consulting urologist, recently was elected president of the Clinical Society of Genitourinary Surgeons.

IN MEMORIAM

LINDA GREEN, R.N.

A memorial service for Linda Green, R.N., 43, was held on December 19 in the Pauline A. Hartford Memorial Chapel.

Ms. Green worked at the Columbia-Presbyterian Medical Center for almost 20 years. She received her diploma in nursing from Temple University Hospital in Philadelphia in 1961, and worked as a staff nurse there for three years. In 1964, she became a staff nurse at PH. A year later, she became a research nurse in the laboratory of Drs. Stanley Bradley and Thomas Q. Morris. She again became a staff nurse in 1973, this time for the PH Emergency Service. In 1980, she was appointed assistant head nurse in the Cardiac Intensive Care Unit, and in 1982, Ms. Green was promoted to nursing care clinician. Most recently, she was responsible for three patient care units with a staff of around 50. One of her specialties was Otolaryngology.

"She was always upbeat," said Martha E. Haber, vice president for Nursing. "You don't find people like her very often."

"Linda Green was a valued member of our staff, and was extremely well-liked," said Dr. Felix E. Demartini, president of The Presbyterian Hospital. "We were all shocked and saddened by her death."■

DR. MARION D. LAIRD

Dr. Marion D. Laird, attending physician at the Sloane Hospital division of The Presbyterian Hospital for 40 years, died on November 18. She was 82 years old.

Dr. Laird graduated from Queens University in Canada in 1922 and received her medical degree from the University of Toronto in 1928. She interned at PH in 1930-1931 and was a resident here from 1934-1935. She retired in 1965.

She is survived by one brother.■

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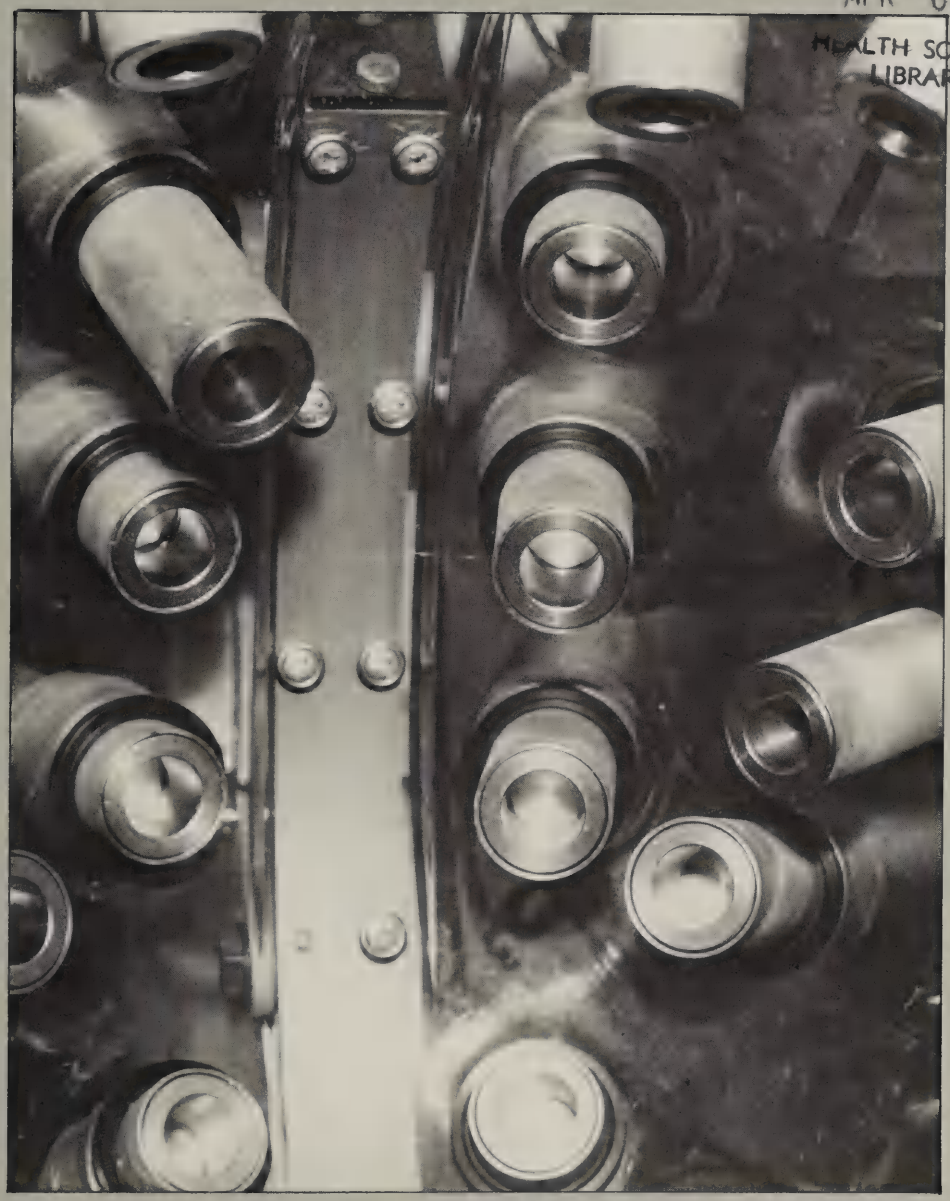

PH: A CENTER FOR STROKE TREATMENT

MARCH 1984

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IMPORTANT NOTICE TO OUR READERS

You are invited to participate in The Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity, unitrust life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information, call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

ABOUT THE COVER

Detectors in this instrument monitor the amount of radioactive tracer in the brain, allowing doctors to determine if blood flow is normal in the region that may have been affected by a stroke.

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STROKE PATIENTS NO LONGER ARE DOOMED TO A LIFE OF DISABILITY

In the past, a stroke often was considered a life sentence in a prison of disability if sudden death didn't occur first.

Stroke claims more than 164,000 lives a year in the United States and disables many more, in some cases causing paralysis and loss of speech.

A stroke occurs when the blood vessels to the brain become blocked or when blood escapes from ruptured vessels. Blood is not delivered to a section of the brain, and within minutes the affected part of the brain tissue is damaged. When blood escapes from vessels, the clot that is formed can damage vital tissues.

As knowledge of stroke grows, physicians at The Presbyterian Hospital are finding that many strokes not only can be diagnosed and managed earlier, but in some cases, even can be prevented.

"More than 70 percent of all patients who suffer strokes will survive them. About a third of these patients will show a striking degree of improvement. We hope to be able to predict improvement in patients. We take an aggressive attitude toward the disease and, frequently, we encounter a good clinical result. Many patients enjoy a good recovery, even if their condition showed no signs of improving initially," says Dr. J. P. Mohr, director of the newly opened Stroke Service at The Presbyterian Hospital.

New imaging techniques used to measure sodium concentrations at the cellular level can detect stroke damage to just a small area in the brain. Such information can help physicians reverse a stroke before it worsens.

PHYSICIANS LISTEN TO THE SOUND OF BLOOD FLOW IN THE ARTERY

By listening to the flow of blood passing through the main artery to the brain, physicians can detect a patient who might be at increased risk for stroke. If the blood movement sounds like the roiling rapids of a river instead of a peaceful flow, a stroke may be likely, and physicians can

continued on next page

Dr. Thomas Tatemichi, at left, and Dr. Fenwick Nichols use ultrasound to inspect a blood vessel and detect arterial blockage on a patient.

The range-gaited duplex doppler enables physicians to assess the smoothness of blood flow through this patient's main neck artery.

prescribe a course of treatment to prevent it.

For some patients, medication can reduce the likelihood of a stroke. In others, surgical removal of the affected area or rerouting healthy blood vessels around the damaged ones can allow a patient to recover.

"We're hoping that we'll learn enough about blood flow to guide surgeons so they can repair diseased blood vessels. This would enable surgeons not only to remove the sections of arterial walls that are causing problems, but also to tailor the surgical repairs to ensure permanent and smooth blood flow in the future," says Dr. Mohr.

HEALTHY PARTS OF THE BRAIN HELP OUT WHERE STROKE DAMAGE OCCURRED

"The brain is very adaptable. When an area of the brain is damaged by a stroke, other pieces of the brain can pick up those duties. These sections may do the tasks of the lost area just as well or they may not be able to handle them. It depends on the patient's age, health and the size of the stroke," says Dr. Fenwick Nichols, fellow in the Stroke Service at PH.

"Every patient who suffers a stroke will get better — but we don't know by how much. A child who suffers a stroke, for instance, might have a good chance of complete recovery because his brain is young, pliable and growing."

A STROKE DOESN'T ALWAYS DOOM A PATIENT TO A LIFE OF DISABILITY

But advanced age and the severity of the stroke doesn't always mean that a patient is doomed to disability.

A 50-year-old clerical worker from New Jersey suffered from about 30 transient ischemic attacks (TIAs) — a condition in which the tissue is starved of blood temporarily. TIAs are seen as possible harbingers of strokes.

The patient was admitted, and although he was given drugs to alleviate his condition, he continued to suffer from TIA spells. He suffered a stroke, which was in its second day and worsening when surgery was recommended.

"Severe atherosclerosis — a narrowing of the arteries — was obstructing the two major blood vessels that supply the back half of the brain," says Dr. Thomas Tatemichi, fellow in the Stroke Service.

"We referred the patient to the neurosurgery team here for an emergency bypass. A branch of a scalp artery was connected to a branch of a brain artery which bypassed the area that was blocked, and the surgery was a success. The patient is fully recovered."

THE DEGREE OF RECOVERY DEPENDS UPON MANY FACTORS

Many patients enjoy good recoveries even if it first appears that they might not improve at all. "Functional recovery depends on such factors as the location, size and cause of the stroke as well as early treatment and rehabilitation," says Dr. Mohr.

"Age is not as great a factor as once thought. Even an elderly patient can make a good recovery. The apparent reversibility of brain tissue damage exists over a longer period than we knew," he adds.

Brain tissue that has been affected by a stroke may appear to be dead or simply inactive. The function of the

tissue is disturbed the same either way, Dr. Mohr explains.

"The brain cells may be in a state of suspended animation. As the brain activity slows down, their function seems to halt," says Dr. Mohr. "If we hope to reverse the process, we must make aggressive treatments in order to salvage viable tissue."

PHYSICIANS AT PH FOCUS ON FIVE DIFFERENT KINDS OF STROKE

There are 14 different kinds of stroke. At PH, physicians are focusing upon five areas of stroke: at least three of these are forms of ischemic stroke, in which there is a decrease in oxygenated blood flow to the brain tissue and the tissue dies. This decrease may be caused by atherothrombosi, a condition in which hardening of the arteries becomes severe enough to block one or more blood vessels. Another cause may be cardiac embolism, in which a blood clot that is formed in the heart becomes dislodged and then is carried by arterial blood flow to a vessel too small for the clot to pass through. A third form of ischemic stroke is a lacunar stroke. In this, high blood pressure may cause damage to a very small blood vessel and impede the passage of blood. Two other areas of stroke under study are: strokes caused by hemorrhaging, and strokes of an unknown cause, which represent about 25 percent of all strokes.

The Hospital's stroke team of neurologists, neurosurgeons, radiologists and rehabilitation medicine staff treats more stroke patients than any other institution in the world. Each year, about 700 stroke patients receive treatment here.

Patients with straightforward cases of stroke, caused by atherosclerosis, blood clots or cerebral hemorrhage, as well as more complex cases, are referred to the Hospital for treatment.

CPMC JOINS IN A NATIONAL STUDY TO LEARN MORE ABOUT STROKE

Columbia-Presbyterian Medical Center is participating in a National Institutes of Health stroke data bank study with three other major medical centers in the United States.

"From the study of pooled information, we hope to achieve a series of clinical pictures that are typical for certain types of strokes," says Dr. Nichols. "These typical cases then can be used as references to accelerate the diagnosis and treatment of stroke victims who have certain symptoms that point to a particular kind of stroke."

The stroke program at CPMC depends upon a balanced mutual interdependence between the laboratory sciences and clinical care.

"When we opened the doors of the new Stroke Service in July 1983, we completed the team. Now, neurologists join with specialists from other services to add balance to the team," says Dr. Mohr.

REHABILITATION CAN BEGIN VERY EARLY IN SOME STROKE CASES

After stroke patients receive treatment, they undergo periods of rehabilitation and physical therapy to relearn simple movement.

Often, a rehabilitation specialist is called in early when a stroke occurs — sometimes when neurologists still

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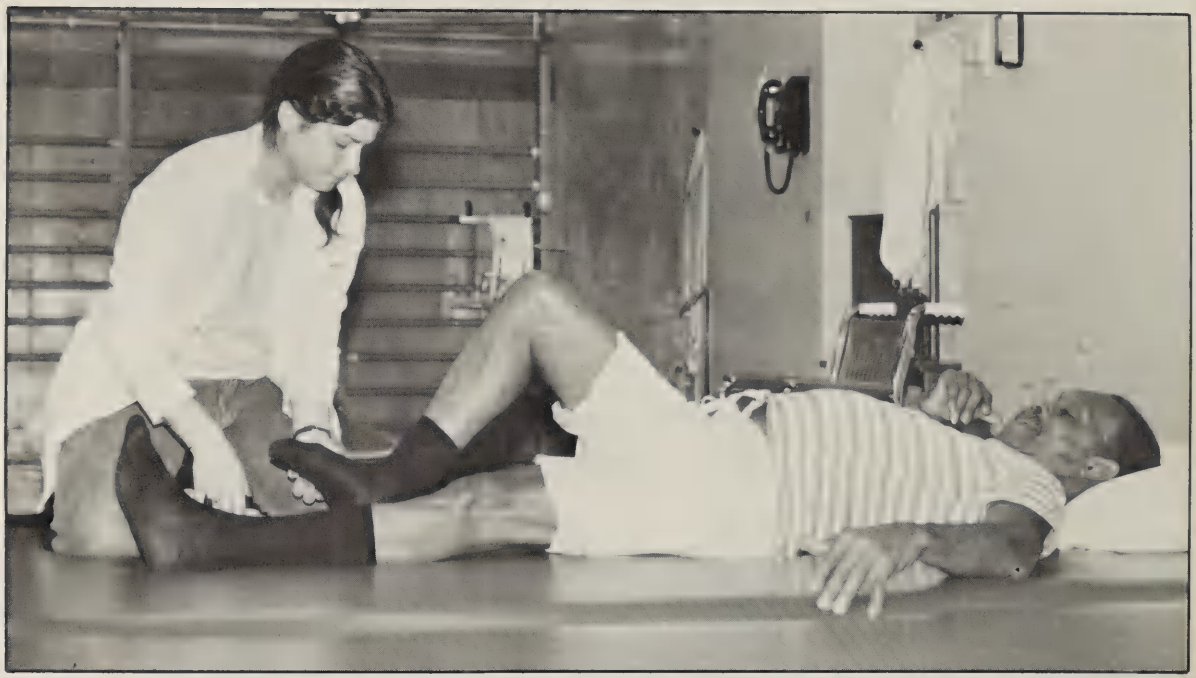
Dr. J. P. Mohr, director of the Stroke Service, reviews newly created forms for a national stroke study.



Anna Picarazzi, registered physical therapist, helps stroke patient William Murphy strengthen foot and trunk muscles.

are diagnosing the case.

"The idea is to prevent the complications of a fixed deformity, such as a frozen shoulder or a hand that is locked into a non-working position," says Dr. Stanley J. Myers, attending rehabilitation physician.

"Even if a stroke patient is comatose, we can give him corrective splints to keep his legs in a good position. A therapist can mobilize the patient's joints by moving his arms and legs. By trying to keep these areas free of tightness, the outlook during recovery is better."

REHABILITATION THERAPY MAY LAST DAYS OR SEVERAL MONTHS

For some, the therapy will last a few days. Other patients whose strokes are more extensive may have to spend several months relearning to control the muscles in their arms and legs. They must work to regain any lost motion in their limbs. Patients whose speech is affected may have to receive speech therapy and relearn how to control muscles to shape words.

"Rehabilitation strives to take advantage of whatever capabilities a patient has after suffering a stroke so that he can live as independently as possible," says Dr. Ann Breuer, attending physiatrist in Rehabilitation Medicine.

Under a physician's guidance, rehabilitation nurses and physical therapists work with patients on the gait and balance of their walk. Occupational therapists help stroke patients with cognitive problems, such as the spatial relationship of objects, as well as with the activities of daily living, such as dressing, eating and personal hygiene. Social workers help the patient's family make any necessary adjustments to living with the stroke victim's disability.

"Many patients ultimately can become their own therapist," says Dr. Myers. "They learn a program of exercises which are done under the supervision of a family member. The patient returns periodically to the Hospital for medical re-evaluation."

From rehabilitation medicine specialists to the physiologists who measure the flow properties of blood and the ability of blood cells to negotiate the narrow channels in the human circulatory system — all of these practitioners work closely together as a team to provide the best possible care for patients and to apply research advances to clinical strides.

"At PH, we have a commitment and diversity that few other institutions could muster," says Dr. Mohr.

WHEN STROKE CUTS OFF BLOOD TO THE BRAIN, SURGEONS RESTORE THE FLOW

Once a stroke has occurred, the damage to the brain may be irreversible. But, in many cases of stroke, surgery can help repair the damage. Strokes often result from an abnormal condition in a blood vessel. For instance, a clot may bar the passage of blood from the heart to the brain, a cluster of cholesterol crystals may cling to an artery wall, slowly growing larger until it prevents blood flow, or, a blood vessel in the brain might weaken and bleed heavily.

Neurosurgeon Dr. James W. Correll removes an atherosclerotic plaque from the carotid artery.

When a blood clot lodges in the carotid artery, the main conduit for blood to move through the neck to the head, surgeons often can remove the obstruction.

Dr. Bennett M. Stein, director of the Neurological Surgery Service at The Presbyterian Hospital, says that surgeons can scoop out the clot and permanently clear the artery's path.

"If the obstruction is deep in the neck, surgeons can bypass the affected artery and attach a synthetic tube from one artery to another, thus redirecting the blood flow around the blocked area," says Dr. Stein.

MONITORING DEVICE TRACKS CHANGES IN BLOOD FLOW

During surgery, neurosurgeons now use a new computer monitoring technique which allows them to respond to minor changes in the electrical activity of the brain. When the monitor indicates that there is reduced electrical activity, it means that blood flow to the brain is lower. If this occurs, the surgeon can compensate by opening blood vessels that have been clamped temporarily.

When the obstruction prevents blood flow, the task is to eliminate or circumvent the block so that blood may travel freely to the brain.

"Even if the blockage is in one of the inaccessible vessels inside the brain, we still can perform a bypass. A small artery, about the size of a pencil lead, that leads from the neck to the scalp is used as the bypass graft. After making an opening as large as a quarter in the skull, neurosurgeons insert the scalp artery and attach it to other arteries in the brain, bypassing the blocked area. The new artery then restores the proper blood supply to the area that was deprived," says Dr. Stein.

When a hemorrhage in the brain is the cause of stroke, surgeons must work to prevent blood from leaking into the brain from damaged blood vessels.

A hemorrhage causes the arteries in the brain to go into a spasm, or "clamp down." A spasm may last briefly or may endure for as long as five weeks. Researchers at Columbia-Presbyterian Medical Center are conducting studies to determine the cause of spasms.

A condition called an aneurysm — a mushroom-shaped blister of an artery — accounts for many hemorrhage-type strokes. "Suddenly, without warning, these blisters may rupture, causing headache, stiff neck, numbness, loss of motor function, or even death," says Dr. Stein.

SWOLLEN PIECE OF ARTERY CAN BE CLIPPED BACK INTO PLACE

Surgeons have been able to control aneurysms in patients whose hemorrhaging has subsided. Under the guidance of an arteriogram, a picture of an artery made possible by injecting an opaque dye into the artery, a neurosurgeon can use an operating microscope to place a tiny metal clip, much like a beautician's

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Dr. Bennett M. Stein, director of the Neurological Surgery Service. Below, members of the neurosurgery team.

Dr. W. Jost Michelsen

Dr. Donald O. Quest

hair clip, on the neck of the swollen artery. The clip is left in place, the aneurysm shrivels up and the affected area eventually becomes scar tissue.

Fifteen years ago, the success rate of such a procedure was under 50 percent. Today, neurosurgeons achieve a 97 percent success rate, says Dr. Stein. This is due to improvements in surgical techniques and anesthesia, the use of the operating microscope, and new drugs that lower blood pressure and prevent engorgement of the aneurysm during surgery.

A less common abnormality of the blood vessels that can lead to stroke is an AVM, or arteriovenous malformation. An AVM is a tangled mass of abnormal vessels in the brain which can hemorrhage at any time.

Normally, the arteries empty blood into capillaries which in turn route the blood into veins. When a direct artery-to-vein connection exists, as in an AVM, it short-circuits the blood so that no blood passing through reaches the brain. Veins cannot withstand the pressure carried by the arteries. When the blood moves directly from the artery to the vein, the vein can rupture and result in a hemorrhage or stroke.

AVMS OCCUR MOSTLY IN THE BRAIN

Although AVMs can occur at other places in the body, they are most common in the brain.

"AVMs generally are larger ana more widespread than aneurysms and must be removed. Surgical removal, when it is feasible, is the only way of assuring total success in AVM treatment," says Dr. Stein.

When surgeons are unable to locate and remove the AVM, they may use a technique called embolization to plug it up. (See story on page 7.)

Although embolization does not totally eliminate AVMs, it leaves them less likely to hemorrhage.

At PH, Dr. Stein and neurosurgeon Dr. W. Jost Michelsen have had outstanding success with surgical removal of embolized AVMs. "Our success rate of 97 percent can be attributed to better preparation of embolized patients for surgery, to the use of the operating microscope and to teamwork," says Dr. Stein. ■

PHYSICIANS DEFUSE A NEUROLOGICAL TIME BOMB

An arteriogram of an arteriovenous malformation in the brain is discussed by Dr. Michel E. Mawad, at left, Dr. W. Jost Michelsen, center, and Dr. Sadek Hilal.

When an abnormal collection of blood vessels forms in the brain, it can be dangerous and unpredictable. If left unattended, this cluster, called an arteriovenous malformation, or an AVM, can cause a stroke, headaches, seizures, and even heart failure.

Embolization, a procedure pioneered at The Presbyterian Hospital by Dr. W. Jost Michelsen, associate attending neurosurgeon, and Dr. Sadek Hilal, director of Neuroradiology, can cut off the blood flow to the AVM safely without hindering the flow to other areas of the brain. Once the flow is reduced, the AVM can be removed surgically with greater safety.

"Embolization reduces the risks of removing large malformations, making the AVM smaller and softer for when it is removed surgically," says Dr. Hilal.

When a patient is embolized, physicians put plastic pellets, much like tiny BBs, or a liquid adhesive into a catheter leading into the bloodstream. The catheter is maneuvered until it is in the AVM or very close to it. The pellets or adhesive then are released, plugging up the arteries making the malformation.

To assure that the blocking substances go directly to the right location, Dr. Hilal developed a balloon catheter, which consists of a small balloon attached to the tip of a tiny microcatheter. When inflated, the balloon effectively cuts off the possibility of the plastic pellets or liquid adhesive from flowing into a normal blood vessel.

In some patients, by restricting the blood flow to the AVM, embolization alone can provide partial and sometimes complete relief from symptoms. Most patients are treated by embolization and surgery. Some patients with large inoperable malformations are treated with embolization alone.

SPECIAL UNIT ALLOWS CLOSE OBSERVATION OF EMBOLIZED PATIENT

The embolization team at PH is composed of neurosurgeons, neuroradiologists and neurologists. No other medical center in the country has a similar combined team.

"We have a separate unit now where the patients who have been embolized are observed by both the neurosurgeon and the neurologist, in case there are any complications. This unit provides for closer observation, both by the nursing staff and by the neurologist," says Dr. Michel E. Mawad, assistant attending radiologist.

When embolization first was pioneered at PH in 1968, favorable results were obtained in almost 80 percent of all cases. Today, the combined approach of embolization and surgery provides a 97 percent success rate, because of improvements in both the technique and the materials used in embolization and in surgery.

Studies of other methods to work inside the blood vessels are under way at Columbia-Presbyterian Medical Center. One of these is angioplasty, a procedure to widen the blood vessel. Selective chemotherapy also can be sent through a catheter into a malignant tumor. Both of these techniques hold hope for future use at the Hospital.

Currently, embolization followed by surgery is the preferred treatment for an AVM.

"The combination of embolization and surgery has made the care of AVMs much safer than before," explains Dr. Hilal. "The overall rate of complication is approximately 1 percent. This is unmatched by any other institution in the world."

VISUALIZING STROKES ENABLES PHYSICIANS TO UNDERSTAND THEIR CAUSES

Dr. Sadek Hilal, at left, and Zang Hee Cho, Ph.D., with the PET scanner. Within the 30-inch sphere are 17 rings consisting of more than 8,000 detectors which use radioactive tracers to help produce an instant picture of the organs in the body.

When a patient comes in with a stroke, he usually has both muscular and speech impairments. One side of his body may be paralyzed or weak. His speech may be slurred or his lips slack.

All of these symptoms will give the physician a rough idea of which part of the brain is affected. If the patient's left side is paralyzed, then the upper right side of his brain may be damaged. The neurologist's understanding of the problem may be aided by visualizing the stroke.

Until recently, the internal life of the brain only could be examined indirectly, because it is enclosed in the bony casement of the skull. In the past, when diagnosing stroke, radiologists injected dyes into the blood or air into the brain's chambers to make the brain structure and disease process visible. But these procedures were difficult and complex for the physician, and painful and dangerous for the patient. Often, the neurologist had to treat a patient for stroke without knowing the cause of the problem. Not until the advent of computerized radiology did it become relatively easy to see inside the brain and determine some of the causes of stroke.

"Strokes may be caused by hemorrhage or clots and treatment is different in each case," says Dr. Philip O. Alderson, director of Nuclear Medicine at The Presbyterian Hospital. "It's also necessary to be sure that the symptoms are in fact caused by a stroke and not by a tumor. These are the first important distinctions in stroke diagnosis and the main reasons for CT scanning."

CT SCANS ARE LIKE WORKS OF ART PAINTED BY A FINE HAND

An X-ray is basically a picture of bones and soft tissues in shades of white and gray. The pictures produced in CT scans, however, may be likened to works of art done by a finer hand.

As the scanner's X-ray tube encircles the patient's head, hundreds of detectors measure the anatomy of the brain from 600 angles. A computer reassembles the vast amount of

data it receives into clear images resembling slices of the brain. A CT scan takes less than a minute and does not cause any greater risk or discomfort to the patient than a conventional X-ray.

WITHOUT OXYGEN AND NUTRIENTS, BRAIN CELLS DIE OFF QUICKLY

If a patient has suffered a stroke, then some areas of the brain will have lost their blood supplies, either momentarily — in a transient ischemic attack, more commonly called a TIA or small stroke — or permanently. Without oxygen and the other nutrients the blood delivers, brain cells die off in a matter of minutes. A CT scan will show which areas of the brain have been stroke-damaged, and will indicate the extent of the damage.

To make the technique more sensitive, a small amount of dye can be injected into the blood to outline the vessels that otherwise would not be visible on the CT scan. The dye enters the bloodstream and seeps into gaps in the "blood brain barrier" — a protective mechanism between the brain and its external blood supply. The gaps are present only in a stroke that has occurred recently.

"Determining how long the stroke has existed can help indicate its severity. By showing whether a stroke resulted from bleeding within the brain, the dye also can indicate what kind of treatment is necessary," says Dr. Sadek Hilal, director of Neuroradiology.

"For example, anticoagulants, which might otherwise benefit the patient's recovery, can interfere with the brain's natural healing process in strokes associated with internal bleeding."

Strokes generally are not visible on CT scans until 48 hours after they occur. Some small strokes even can elude the CT scanner.

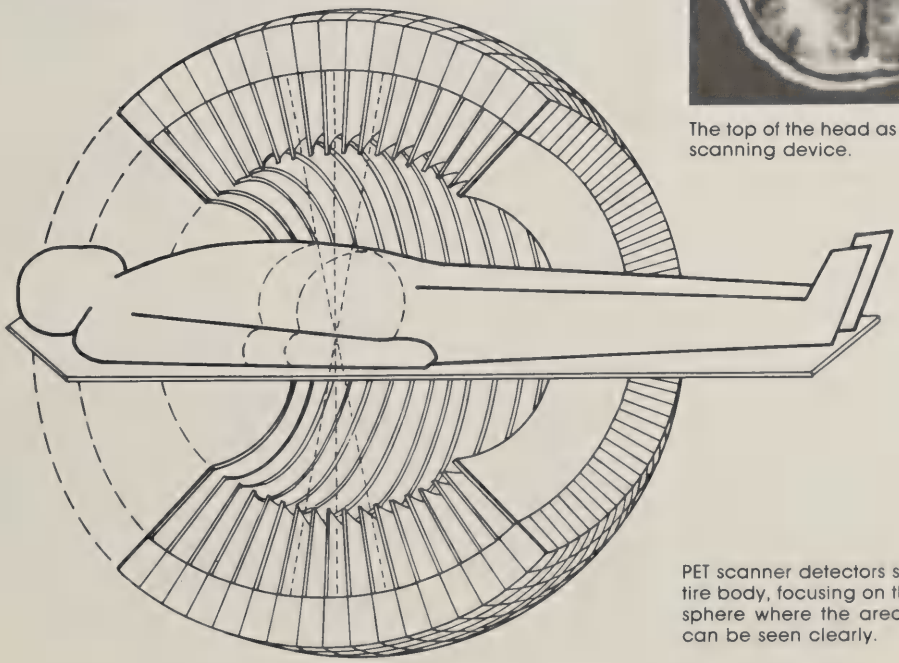
NMR CAN PINPOINT TUMORS THAT CT SCANS CAN'T IDENTIFY

Another imaging technique, the multi-nuclear Nuclear Magnetic Resonance scanner, obtains its images by using powerful magnets to depict certain elements within each cell. Hydrogen is a basic component of the water that is present everywhere in the body. Without using radiation or any harmful substances, ordinary NMR can produce a picture of hydrogen concentrations within the body from any angle.

NMR also is useful for scanning the lower back part of the brain, the brain stem, which is difficult to image with a CT scan because of large amounts of bone in the region. Bone is opaque to X-rays, but nearly invisible to NMR.

continued on next page

The top of the head as seen by an NMR scanning device.



PET scanner detectors surround the entire body, focusing on the center of the sphere where the area being studied can be seen clearly.

PH HAS THE WORLD'S MOST POWERFUL CLINICAL NMR UNIT

Slight imbalances in the chemical composition of brain cells are often the first signs of brain disease, including stroke. For example, brain cells that are injured will have higher than usual concentrations of sodium. This is because salt leaches into weakened or dead cells from the blood. Normal cells continuously pump salt back out.

Because of the high magnetic field of the multi-nuclear NMR scanner at the Columbia-Presbyterian Medical Center, sodium and phosphorous also can be imaged. Phosphorous may provide important information about muscular disorders, as well as about the level of malignancy of tumors.

Fluids, such as water, produce strong signals. Solids, such as bone, produce the weakest signals. Hydrogen scans, therefore, are similar to CT scans in that they indicate roughly tissue density. The multi-nuclear NMR can do more.

"Multi-nuclear NMR will be able to detect strokes earlier than has been possible until now," says Dr. Hilal. "By detecting changes in the chemical function of the brain at the most fundamental level, it will allow us to detect and treat strokes before they have caused significant damage. With the help of recent advances in surgery and techniques of reconstructing blood vessels, we will, in some cases, be able to reverse the stroke."

TECHNIQUE CAN PRODUCE A PICTURE OF NARROWING IN THE BLOOD VESSELS

Strokes often are caused by atherosclerosis, a narrowing of the arteries leading to the brain. To get a picture of the narrowed vessels, physicians use a computer to compare X-ray images of an area in the brain before and after injecting a dye into the patient.

Digital Subtraction Angiography can provide an unobstructed view of any single artery by highlighting the width of the vessel and erasing other tissue. Because narrowing occurs over a period of years, this procedure can help detect atherosclerosis before it poses a danger, and can allow physicians to prescribe treatment.

As imaging techniques have improved, so have the surgical procedures for treating stroke. (See story on page 5.) As treatments are perfected, it has become increasingly important to monitor the patient's response to treatment. If a patient is not responding as hoped, the treatment program can be altered or improved.

TEST IS USED TO MONITOR CEREBRAL BLOOD FLOW

One way to monitor the patient with a stroke is by using a regional cerebral blood flow study.

The patient inhales a breath of slightly radioactive xenon gas while wearing a helmet-like instrument equipped with 32 probes. The xenon is absorbed into the brain through the bloodstream. As the blood quickly washes away the xenon, the rate of blood flow can be measured by each of the probes, producing a regional map of the cortex (outer layer) and of the blood flow in the brain.

"As blood flow is reduced by the stroke, or restored during recovery, this test will show the location and extent of the change," says Dr. Alderson.

A regional cerebral blood flow laboratory has been developed at PH under the direction of Dr. Isak Prohovnik, lab director, in cooperation with Dr. Alderson and the PH Nuclear Medicine Service. The lab is studying cerebral blood flow changes in patients with mood disorders and schizophrenia as well as in patients with stroke.

NEW TESTS ARE QUICK, PAINLESS AND CARRY NO RISK TO THE PATIENT

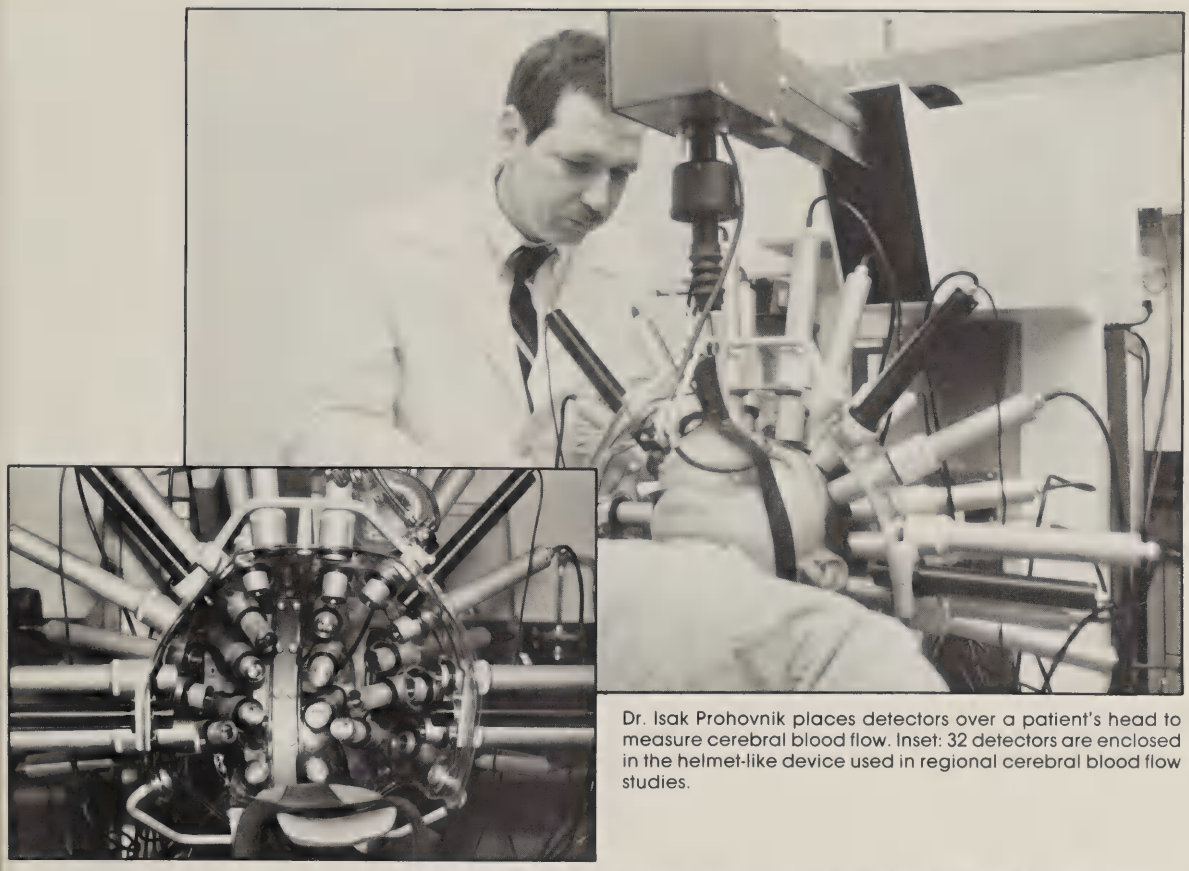
These and other tests can be performed quickly without risk or discomfort to the patient, and also can be used more often to diagnose more patients.

For instance, the range-gaited duplex doppler uses two kinds of sound waves aimed at the blood vessels in the patient's neck leading to the brain. This device can screen patients in whom stroke is suspected by determining how fast the blood is flowing.

A probe is placed on the patient's neck and a picture of the sound wave is displayed to physicians. If the vessel is narrow and clogged in places, the test will indicate this and treatment can be prescribed to prevent a stroke — in some cases, even before the patient has experienced symptoms of the disease.

"We look for signs of increased blood flow and turbulence," says Dr.

Dr. Philip O. Alderson adjusts the SPECT scanner, which helps determine the area and extent of a stroke.



Dr. Isak Prohovnik places detectors over a patient's head to measure cerebral blood flow. Inset: 32 detectors are enclosed in the helmet-like device used in regional cerebral blood flow studies.

Fenwick Nichols, fellow in the Stroke Service. "There may be small whirlpools, similar to eddy currents in a river, that send blood flow in the wrong direction.

"Some patients may have noise in the artery because of a heart murmur or a small buildup of plaque, and require no treatment. Others may show no symptoms, but have a narrowing of the artery. Then we must determine whether they need surgery or just medication."

SPECT HELPS TO SHOW THE ENTIRE AREA OF STROKE

In Single Photon Emission Computerized Tomography (SPECT), physicians use radioactive tracers -- substances that enter brain cells in direct proportion to the blood flow in the area.

"These tracers outline the areas of high blood flow, especially in the cerebral cortex and the cells deep within the brain," says Dr. Alderson. "SPECT allows the radiologist to see not only which area is affected, but also whether the problem is superficial or deep. This technique will allow us to monitor stroke therapies."

Another new imaging technique that uses radioactive tracers to produce an image of the brain is Positron Emission Tomography (PET). Using highly specialized radioactive tracers, it measures the rate at which the brain is consuming glucose and oxygen, the principal source of energy in the body. PET also can measure the extent of damage to any particular region caused by a stroke.

CPMC researchers use a PET scanner for laboratory experimentation. The device now in use served as the prototype for the design of an advanced scanner for which Dr. Hilal received the Jacob K. Javits Neuroscience Investigator Award. (See story on page 13.)

"Both PET and SPECT now also are being used to evaluate the presence, location and concentration in the brain of what are called 'receptors' — specific chemicals on cells that receive signals from particular chemicals produced by the body," explains Dr. Alderson. "When these receptors are not working properly, a breakdown in communication between cells occurs. This is thought to be an important factor in a whole host of brain diseases, including Huntington's disease, Alzheimer's disease and stroke."

While CT scanning and ultrasound devices, such as the duplex doppler, are in regular clinical use at the Hospital, many of the other imaging technologies still are being perfected experimentally.

"In the last 20 years," says Dr. Hilal, "we have gone from imaging a portion of the cerebral circulation to being able to study non-invasively the very chemistry of the brain itself — point-by-point, with NMR. As we learn about the type of activity in which the brain is engaged, we are better able to develop new treatments."

NEWSBRIEFS

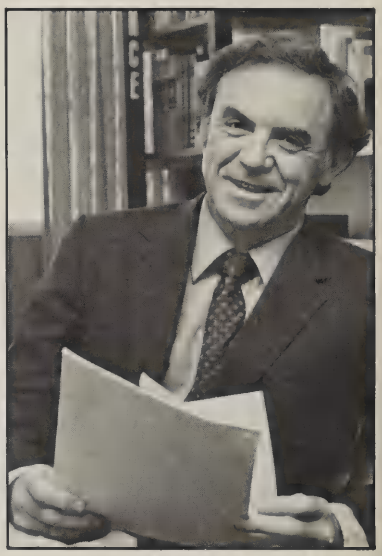
DR. PARDES IS NEW DIRECTOR OF THE PSYCHIATRY SERVICE AT PH

Dr. Herbert Pardes has been appointed director of the Psychiatry Service at The Presbyterian Hospital. For the past three years, Dr. Sidney Malitz has served as acting director. In addition, Dr. Pardes has been appointed director of the New York State Psychiatric Institute and Lawrence C. Kolb Professor and Chairman of Psychiatry at the Columbia University College of Physicians & Surgeons.

Dr. Pardes served as director of the National Institute of Mental Health in the Department of Health and Human Services since 1978. In this capacity, he determined direction for research support in mental health and significantly increased attention to clinical research, neuroscience, epidemiology and treatment research. As director, Dr. Pardes instituted research evaluation on the national and international levels.

Previously, Dr. Pardes was chairman of the departments of psychiatry at the University of Colorado Medical Center and the State University of New York Downstate Medical Center in Brooklyn. He has held numerous academic positions and clinical posts within the State University of New York's mental health program.

Dr. Pardes is a graduate of the State University of New York in Brooklyn. He is certified by the American Board of Psychiatry and Neurology and is a fellow of the American Psychiatric Association, the American College of Psychiatrists and the American College of Psychoanalysts.



Dr. Pardes

PH HOUSE STAFF LOUNGE IS DEDICATED

The Hospital's new House Staff Lounge was dedicated during a recent ceremony in honor of the memory of Dr. John Chase Wood Jr. In photograph, Dr. Jonathan LaPook, fellow in the Medical Service, at right, shows a specially inscribed plaque to Diana Wood, while her son John C. Wood III looks on. Also on hand for the ceremony were Dr. Keith Reemtsma, at left, director of the Surgical Service, and Dr. Michael Katz, center, director of the Pediatric Service.

QUESTIONNAIRES ARE BEING MAILED TO PH ALUMNI FOR NEW DIRECTORY

Questionnaires for the first PH Alumni Directory now are being mailed to alumni of The Presbyterian Hospital. After completed questionnaires are returned, they will be sent to the publisher.

Alumni questionnaires will be verified by telephone by the Harris Publishing Company, which plans to finance the directory through sales to alumni. Afterwards, alumni can order personal copies.

The new publication, scheduled for release in 1985, will list alumni alphabetically, geographically, and by class year. Each listing will include: name, service, undergraduate and medical school data, specialty, position or academic title, hospital affiliation, office address and phone, and home address and phone.

DR. ARANOW IS NAMED PHYSICIAN OF THE YEAR AT CPMC

The Society of Practitioners of CPMC presented its Physician of the Year award to Dr. Henry Aranow Jr. at a special dinner in his honor on February 1.

The annual award is given to a practitioner who exemplifies the highest tradition of patient care and who excels as a teacher of medicine. Dr. Aranow is a 1938 graduate of the Columbia University College of Physicians & Surgeons. He was an intern at PH from 1938 to 1940 and served his residency at the Hospital. He served as acting chairman of the Medical Service twice and currently is a consultant in the service.

The Society of Practitioners is an organization of physicians in the medical center whose aim is to improve the quality of patient care.■

Among the guests at a dinner honoring Dr. Henry Aranow Jr., fourth from left, were, from left: Dr. David Moore, Dr. Michael Wechsler, Dr. Felix E. Demartini, president of PH, Dr. Carl Feind, Dr. Ralph Veenema, Dr. Alfred M. Markowitz, president of the Society, and Dr. Robert Glickman, director of the Medical Service.

DR. HILAL RECEIVES $1 MILLION AWARD FOR RESEARCH IN THE NEUROSCIENCES

Dr. Sadek Hilal, director of Neuroradiology at PH, is the recipient of a Jacob K. Javits Neuroscience Investigator Award. The award was presented by the National Institute of Neurological and Communicative Disorders and Stroke of the National Institutes of Health.

Dr. Hilal received the award for his "distinguished record of substantial contributions" in his field. Under the award, Dr. Hilal will receive $1 million for research support over the next seven years.

The award is for the design of the unique Spherical Positron Emission Tomography scanner, which allows doctors to study how the brain uses glucose, oxygen and proteins. The scanner uses small amounts of radioactive tracer to allow the imaging of small structures within the body.

The scanner was designed by Dr. Hilal, director of the Imaging Research Center at Columbia-Presbyterian Medical Center, and Zang Hee Cho, Ph.D., co-director of the center.■

46TH ALUMNI MEETING PLANNED FOR APRIL

The 46th Annual Babies Hospital Alumni Meeting will be held April 27 at the Babies Hospital division of the Hospital's Center for Women and Children.

Registration and coffee hour will begin at 9:30 a.m. in the McIntosh Conference Room. The Hattie Alexander Memorial Lecture will be presented in Amphitheatre A on the first floor in the Columbia University College of Physicians & Surgeons. Dr. Edwin Kilbourne, professor and chairman of the Department of Microbiology at the Mount Sinai School of Medicine, New York, will lecture on "Influenza and the Uses of Serendipity." A luncheon and business meeting will follow in Sturges Auditorium in Maxwell Hall.■

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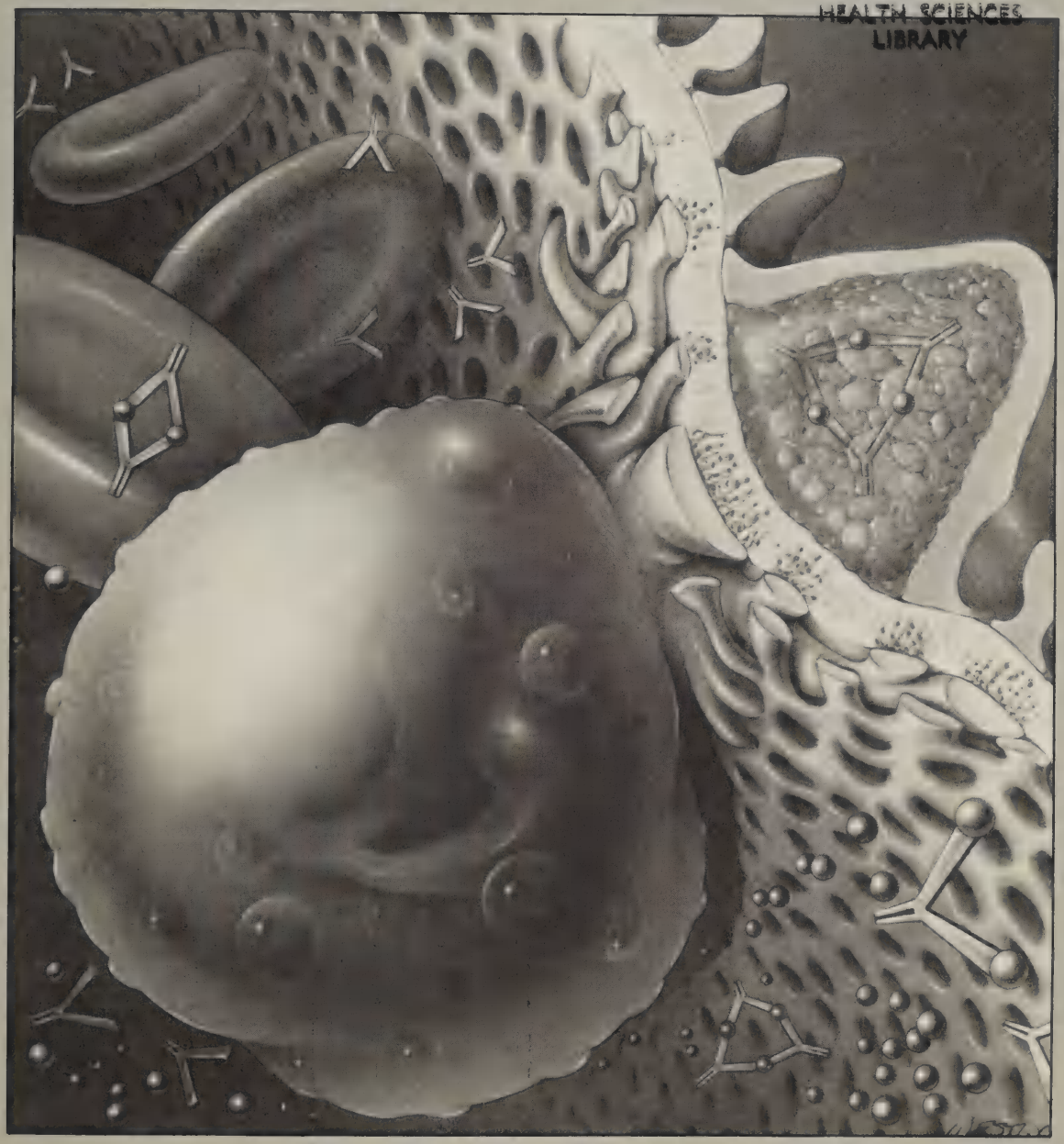

IMMUNOLOGY: HELPING THE BODY HELP ITSELF **MAY 1984**

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IMPORTANT NOTICE TO OUR READERS

You are invited to participate in The Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity, unitrust life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information, call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

ABOUT THE COVER

The cover shows an artist's conception of autoimmune tissue injury. The large spherical shape in the center is a white blood cell attacking the body's normal tissues. Illustration by William B. Westwood.

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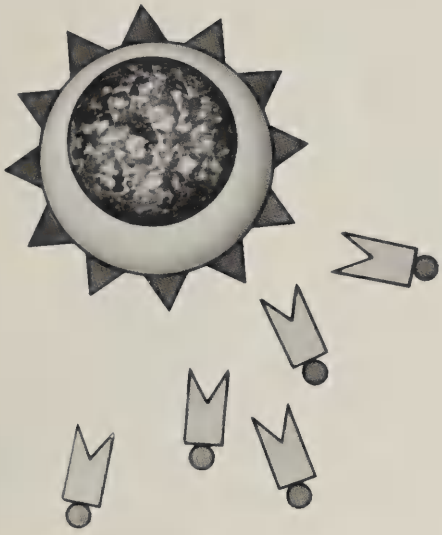
CELLULAR DIVISION OF LABOR PROTECTS AGAINST DISEASE



John W. Karapelou

Above: specially tagged antibodies make their way to marker sites on a T-cell. At right, antibodies latch onto the sites on the cell's surface, where they are used for identification and diagnosis.

The division of labor that exists among the butchers, bakers and candlestickmakers of society operates on the same principle at the most basic level of life — the cell.

While medical researchers long have known about the existence of cells in the immune system, they didn't know that the billions of cells inside the system work by division of labor.

The immune system's job is to guard the body against infection and disease. When foreign invaders enter the body, the system dispatches small white blood cells called lymphocytes to begin a counterattack.

These lymphocytes, called T-cells, roam through the body, looking for foreign substances, or antigens. If the T-cells run into an organism that doesn't carry the proper "markers," its "identification card" that is necessary for it to be recognized as one of the person's own cells, they react by teaming up and clustering around the invader, much like policemen detaining a suspect.

Helper T-cells send an SOS signal and recruit assistance from B-cells, which make disease-fighting substances called antibodies. When the antibodies successfully have destroyed the invaders, another kind of T-cell, known as a suppressor, sends a message to stop the slaughter. T-cells also have the power to destroy invaders. These killer T-cells are charged with destroying cancer cells and viruses that enter the body.

THE IMMUNE SYSTEM SOMETIMES "RUNS WILD"

In most people, the immune system regulates the body's reaction to bacteria, viruses and toxins. Sometimes, the system doesn't work and the signal to stop producing antibodies never is sent. In this case, the immune system eventually loses its ability to distinguish the body's own cells from foreign substances. As a result, the immune system destroys the tissue it is supposed to protect.

When the immune system acts as a destructive force in the body, such diseases as arthritis, juvenile diabetes, lupus and myasthenia gravis can result. But researchers have developed techniques to harness the disease-fighting power of the immune system using monoclonal antibodies, interferon and individual markers on cells to pinpoint disease in its early stages and provide earlier diagnosis and treatment to patients.

DOCTORS DEFEND AGAINST ATTACKS FROM THE BODY'S OWN IMMUNE SYSTEM

Memory is the key to the human immune system. If a child suffers from measles, his system builds an immunity to the disease. He forms antibodies, or protectors, that send the infectious agent to a hasty retreat if it is encountered again.

When immunological memory fails — by not shutting itself off, or by an inability to make the distinction between the body and foreign substances — the body may begin to attack itself. Antibodies, proteins that protect against infection, devour the very tissue they are supposed to protect and create a variety of conditions collectively called autoimmune disease.

RHEUMATOID ARTHRITIS DISABLES THE YOUNG AS WELL AS THE OLD

Arthritis alone affects more than 36 million people in the United States, young and old alike.

The first signs of arthritis began in 11-year-old Krista Nicholas, of Fairfield, Connecticut, the same way they appeared in a 42-year-old patient who regularly visits the Arthritis Clinic

Andrea Carter, who is being treated for Kawasaki Disease, which can produce arthritis, gets mealtime assistance from Dr. Jerry C. Jacobs.

Severely deformed hands resulting from rheumatoid arthritis.

Courtesy Arthritis Foundation

at The Presbyterian Hospital.

When Krista was a 3-year-old, her mother noticed swelling in one of her ankles. Six weeks later, Krista was bedridden.

"Krista was the sickest child I ever had as a patient, but treatment and extraordinary support from her family have allowed her to go back to school and resume many childhood activities," says Dr. Jerry C. Jacobs, attending pediatrician and director of the Pediatric Rheumatology Division.

Today, Krista still has pain, but lives an active life as a fifth-grader, Girl Scout and occasional swimmer.

The older patient had the typical symptoms of rheumatoid arthritis: pain, swelling, redness and stiffness in the joints.

In a severe case of arthritis, the inflamed tissue can invade the cartilage around the ends of the bones and devour it, leaving scar tissue or bone that is fused and rigid.

Physicians are uncertain as to what causes rheumatoid arthritis. "Patients produce antibodies that destroy the joints, but we don't know what sets off the immune response," says Dr. Rima Kopelman, assistant attending physician and director of the Arthritis Clinic.

"Recent studies have described the existence of a viral agent which may be related to the disease. Sixty-five percent of all rheumatoid arthritis patients have a specific genetic marker which may make them more susceptible to developing the disease." (See related story on page 11.)

Treatments for arthritis vary, depending on the type and severity of the disease. Aspirin remains the most-prescribed medication because it is effective in reducing pain and in reducing inflammation with few side effects. A family of drugs called non-steroidal anti-inflammatory drugs is similar to aspirin and may be used by some patients.

Steroids are used in some cases, but their long-term use can result in dangerous side effects. Many other therapies are being used.

Patients who have lost the function of a hip, knee or shoulder joint may require a total joint replacement by orthopedic surgeons. "This has led to significant improvement in some patients. Therapy for arthritis requires the cooperation of many disciplines, from rheumatologists to rehabilitation medicine specialists.

"But no matter what the treatment, therapy for arthritis patients stresses the continuation of as active a lifestyle as possible," says Dr. Kopelman.

MYASTHENIA GRAVIS TREATMENT RESTORES AN ACTIVE LIFE

Susan Steinhorn had difficulty reading, couldn't muster the energy to tighten her lips while eating and barely could walk when she was admitted to The Presbyterian Hospital for myasthenia gravis.

"I felt as if I was totally deteriorating at 19," the 20-year-old Lehigh University junior reflects. It has been nearly a year since she was diagnosed and treated at PH.

"I didn't know what was happening to me as I steadily became weaker. My doctors didn't know what it was either. Then, last March, I came to The Presbyterian Hospital," says Susan.

Following a treatment program here, Susan now is an active college student with a full load of classes and

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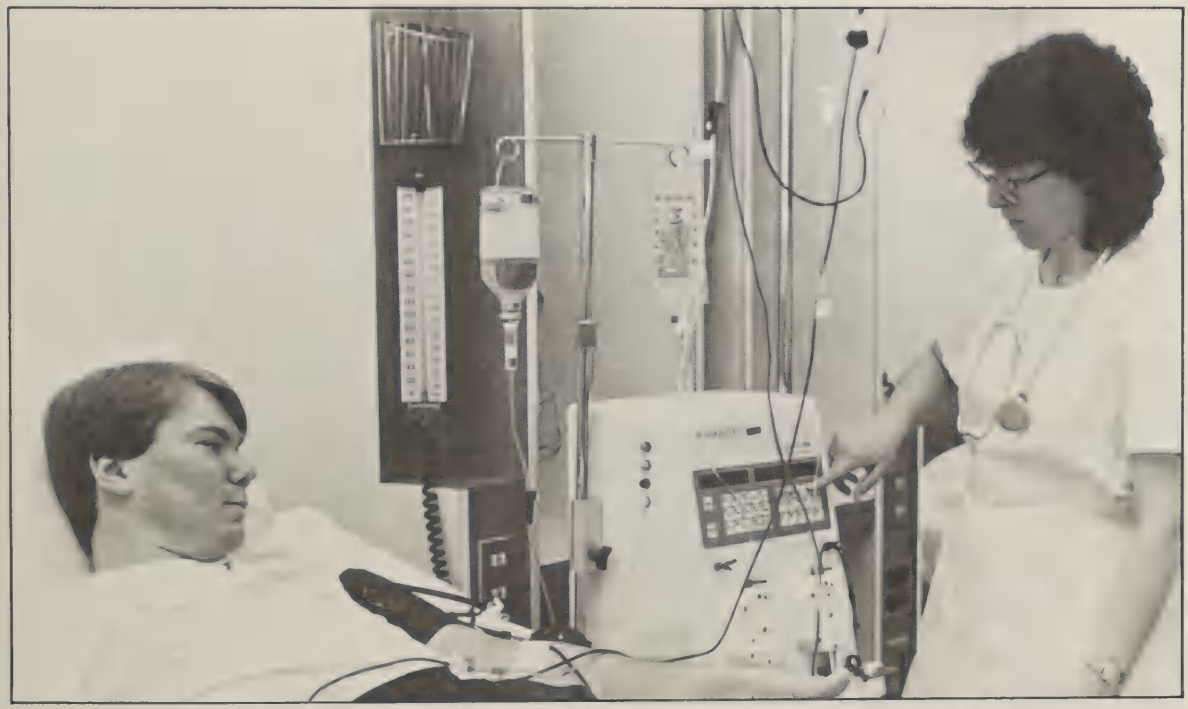


Maureen Borkowski, R.N., administers a form of plasmapheresis to Joseph Gallini, 22, of Florham Park, N.J., in which plasma and some white blood cells are removed from his blood for treatment of dermatomyositis.

activities and a dramatically improved outlook on life.

Myasthenia gravis affects the signaling system between the nerves and the muscles. Normally, a substance called acetylcholine is released by nerve endings. Receptors on the muscles pick these signals up and cause the muscles to contract.

"For some reason, myasthenic patients produce antibodies that destroy the receptors," says Dr. Audrey Penn, attending neurologist. "If we can keep the level of attacking antibodies down or reduce their production, we can help our patients get better."

When myasthenia gravis first appears in its victims, its effects may be mild, such as double vision or a slight weakness. But as the disease progresses, patients may be unable to swallow, walk or breathe. Early diagnosis and treatment can help and even cure most myasthenia patients.

Drugs that suppress the immune system are used in some patients. Plasmapheresis, or "washing" antibodies out of a patient's blood, is another important treatment. Dr. Marcelo R. Olarte, assistant attending neurologist, who created the plasmapheresis program at the Hospital, explains how it works:

"Plasmapheresis, or plasma exchange, is a treatment in which a patient's blood is carried from his arm into a machine where the blood cells are separated from the plasma. Antibodies in the bloodstream that interfere with the transmission of nerve impulses are removed, and the blood is returned to the patient."

Dr. Olarte says that while blood "washing" improves myasthenia symptoms quickly, its effects are short-lived. "The benefits last eight to 16 weeks, then the weakness recurs and the process must be repeated."

Plasmapheresis is used to cleanse the blood before a surgical method of treating myasthenia, called thymectomy, or removal of the thymus gland.

The thymus is a major part of the immune system. It is about the size and shape of a hand. The thymus is responsible for normal immunity, but its normal function decreases in early childhood. Then, the bone marrow and spleen protect the body.

"When myasthenia gravis produces generalized symptoms, even though mild, we recommend thymectomy and believe that the more complete the removal, the better the results," says Dr. Alfred Jaretzki III, associate attending surgeon. "Removal sets the stage for either marked improvement, or remission of the disease, presumably by eliminating the source of the destructive antibodies."

Dr. Jaretzki, who pioneered a new and more extensive form of thymectomy, says that preliminary studies indicate that 60 percent of patients show no signs of the disease within four years after this type of surgery.

Mark Townsend

Lupus patient Janet Townsend has resumed her career as an artist following a serious bout with the disease.

LUPUS PATIENT FINDS THAT LIFE AND CAREER CAN GO ON

Portrait painter and professional photographer Janet Townsend felt tired, but attributed her lethargy to work and to her family's move to a new home. Soon, she also began to have pain while walking and her fingers and joints became swollen. She thought it was arthritis, but her family doctor suspected it might be more serious. After visiting many specialists, the diagnosis was clear: lupus.

Lupus is a disease that affects the connective tissue in the body. For some reason, the body's white blood

cells begin making antibodies against genetic material which can be found in the blood. These antibodies bound to genetic material (immune complex) can settle in various tissue and cause damage.

The symptoms a patient experiences depend on where the complexes settle, such as in the skin, blood vessels, joints, kidneys, nervous system, gastro-intestinal tract or even the brain. Wherever they settle, they interfere with the normal function in that area.

"After I was diagnosed, things went downhill fast," says Mrs. Townsend, who lives in West Redding, Connecticut. "I developed kidney disease, lung problems and memory loss."

A few of her art students recommended that Mrs. Townsend seek help from lupus specialists at The Presbyterian Hospital. Mrs. Townsend then became the patient of Dr. Dorothy Estes, associate attending physician and director of the Rheumatology Laboratory at CPMC.

Almost three years later, Mrs. Townsend has resumed a normal life. She paints, teaches art classes and belongs to a womens' group at her church.

"If I take on too many activities, I tire easily. The one flareup I had was easily controlled with medication," says Mrs. Townsend. "I'm very encouraged. When Dr. Estes told me that life expectancy as a lupus patient was fast approaching near-normal, that made a big difference in my outlook. Her comment changed my whole way of looking at the disease. I realized that life could go on."

Lupus affects mainly women from 20 to 45 years old, although it is not unusual in teen-agers or older people. When the disease first appears, there may be a skin rash, kidney disease, arthritis, seizures or pneumonia.

"Normally, there are checks and balances between antibodies and cells. In most of us, this system works appropriately and very few antibodies that attack oneself are made. But in lupus, this system breaks down," says Dr. Jane H. Morse, associate attending physician and rheumatologist.

"When we make a diagnosis of lupus, we look for the self-attacking antibodies in the blood and determine which organs are involved. If lupus is present, we can prescribe non-steroidal anti-inflammatory drugs in mild cases or steroidal drugs, in more severe cases," she adds.

Survival rates of lupus patients have improved vastly, says Dr. Estes, who is studying autoimmune connective tissue diseases. She says that doctors now are able to recognize milder forms of lupus and offer more types of treatment. "The vast majority of lupus patients survive at least 10 years after the onset of the disease and the figures are improving all the time," says Dr. Estes.

JUVENILE DIABETES: 300,000 SUFFER FROM THE DISEASE

Juvenile diabetes was diagnosed in Andrew Abramson when he was 9 years old and losing weight. One month later, he suffered an insulin reaction, lost consciousness, and was brought to The Presbyterian Hospital.

Andrew, now 13, lives a normal life. He goes to school, plays outdoors and rides his bicycle like other youngsters his age.

As one of 300,000 juvenile diabetics in the United States, who range in age from infancy to middle age, he must take daily insulin injections to stay alive.

"Juvenile diabetes is more severe than the adult form. It begins earlier, and has a high incidence of severe, long-term complications, such as blindness. Unlike patients with the adult form of diabetes, patients with juvenile diabetes are totally insulin-dependent," says Dr. John F. Nicholson, director of the Children's Diabetes Clinic at PH.

The cause of juvenile diabetes remains unknown. The body attacks its own insulin-producing cells and cuts off the insulin that allows sugar in the blood to enter certain cells. Because sugar cannot be used properly, the body taps fats in the system for energy. With no insulin to limit the use of fat, acids which are by-products of fat metabolism can build up — which can be fatal.

Insulin is produced in the pancreas by beta cells that dwell in small areas known as the islets of Langerhans. In juvenile diabetes, it is believed that a viral infection kills the beta cells or causes the immune system to destroy them.

"The immune system is designed to protect the entire individual. When it wants to get rid of a virus, sometimes the immune system must kill a cell — much like fighting a war in a person's own country, when some sections are bound to be destroyed.

"In juvenile diabetes, viruses may be eliminated at the cost of the affected cells, or it may be that the immune system doesn't get the message to shut off when the infection is over," explains Dr. Nicholson.

Although insulin has prolonged the useful lifespan of juvenile diabetics, researchers are studying ways to restore insulin-producing cells, possibly through transplants.

Juvenile diabetes patient Andrew Abramson learns how to test his own blood sugar under the direction of Dr. John F. Nicholson.

PHYSICIANS HARNESS THE IMMUNE SYSTEM TO COMBAT DISEASE

Because drugs are effective only against a few viruses, researchers have turned to the powerful resources of the body's own security system — the immune system — for ways to locate, diagnose and treat disease.

Doctors now can copy and program laboratory-made antibodies to destroy a specific disease target. They are called monoclonal antibodies.

Physicians at The Presbyterian Hospital also are treating patients with interferon, a product of the immune system, which may be helpful against tumors and viral infections.

MONOCLONAL ANTIBODIES WORK MUCH LIKE "GUIDED MISSILES"

Monoclonal antibodies can distinguish one cell from another. When they are used for diagnosis, a fluorescent dye is latched onto them. When they reach the cell they were designed to find, the fluorescence "lights up" its target. A computerized cell sorter that recognizes fluorescence computes the number of cells. If there are too many or too few cells, doctors can tell if there is a problem.

These special techniques enable doctors to recognize the number and type of infection-fighting T-cells, which makes for a more accurate diagnosis.

"We can use this information, for instance, to determine whether a patient has an autoimmune disease — a condition in which the patient develops an immune reaction to his own tissues — or AIDS (acquired immune deficiency syndrome) by looking at the number of T-cells present in a blood sample," says Dr. Leonard Chess, director of the Division of Rheumatology.

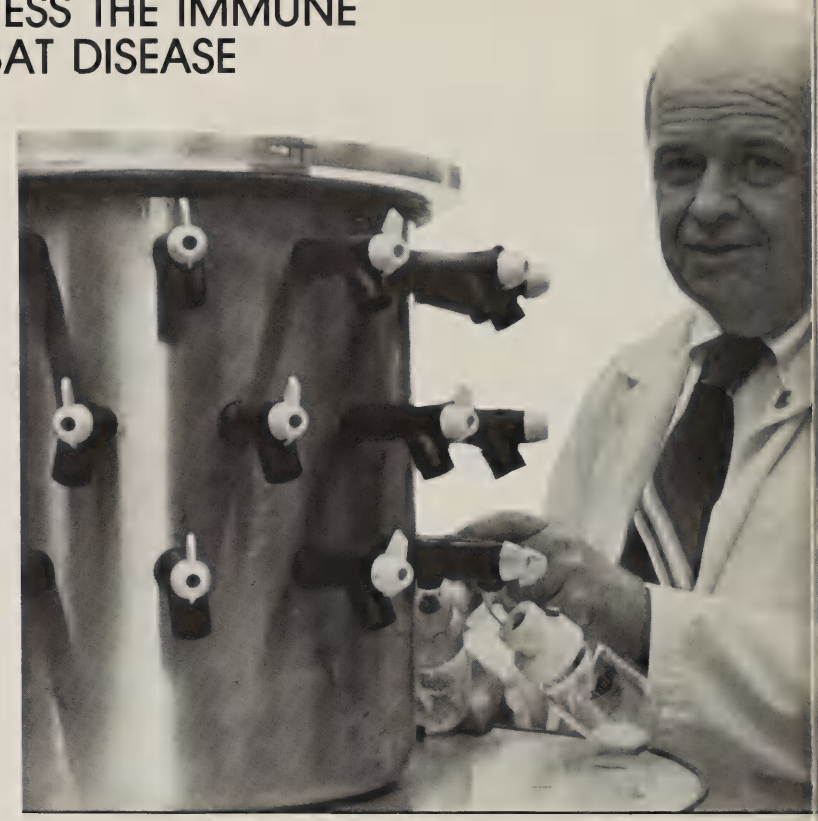
"In AIDS patients, the blood test shows a shortage of a certain kind of T-cell called a helper, a situation that leaves the body with no defense against infection," explains Dr. Chess.

"In a rheumatoid arthritis patient, we may find too many helper T-cells. It is thought that this excess of helper T-cells induces the production of antibodies and inflammation in rheumatoid arthritis," he says.

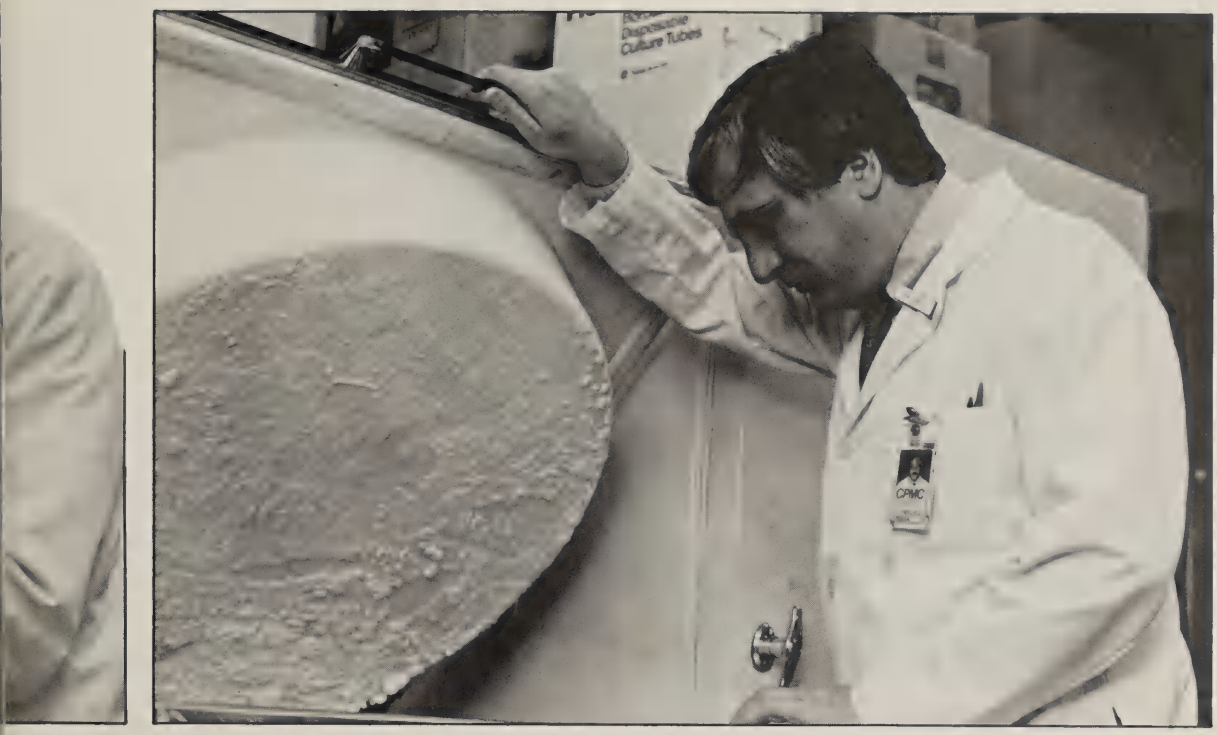
Made-to-order antibodies look and act exactly like any one of the millions of antibodies that exist in the body. Scientists sort through human antibody samples in the laboratory and then isolate the ones that can destroy invading viruses, for example. Copies of those antibodies are made and dispatched into the body to find and destroy a specific harmful agent.

Dr. Vincent P. Butler Jr., director of the Division of Immunology at the Hospital, says: "Researchers at Columbia-Presbyterian Medical Center were prominent in first defining the chemical nature of antibodies. (See story on page 8.) This enabled researchers around the world to study the role of antibodies in fighting disease."

Immunochemist Dr. Elvin A. Kabat, Ph.D., who is working on a National Science Foundation and National Institutes of Health study to investigate the structure and genetics of antibody molecules, says that research now under way will make it possible for scientists to understand how antibodies combine with markers on foreign cells.



Above: Dr. Vincent P. Butler Jr. adjusts the apparatus for freeze-drying antibodies. Top right: Dr. Leonard Chess inspects a supply of cells. Below: Dr. Elvin A. Kabat with models of molecules which make up one of the human blood groups.



"This information will help to answer the more important question of how antibodies react with substances in the body — how they interact with tissues and cells and cause damage, as in autoimmune disease," says Dr. Kabat.

For instance, studies suggest that antibodies against strep infection may react with heart tissue and cause rheumatic fever.

ANTIBODIES CAN HELP PREVENT LETHAL DRUG OVERDOSE

"Until the development of antibodies, it was not possible to measure the amount of certain drugs in a patient's bloodstream. In the past, if a dosage of digitalis was ineffective and the dose was increased slightly, it was possible that just a minute increase could cause an irregular heartbeat and be lethal to the patient," says Dr. Butler.

Recently, Dr. Butler and his team of immunologists developed an antibody to measure the degree to which intestinal bacteria destroy the digitalis.

"Normally, the drug is excreted without a chemical change. If it enters the intestine and is changed by bacteria, it can become ineffective. Patients with this problem may require a high dose of digitalis," he explains.

The Hospital is the only institution in the world with these tailor-made antibodies, which are helping heart disease patients here everyday.

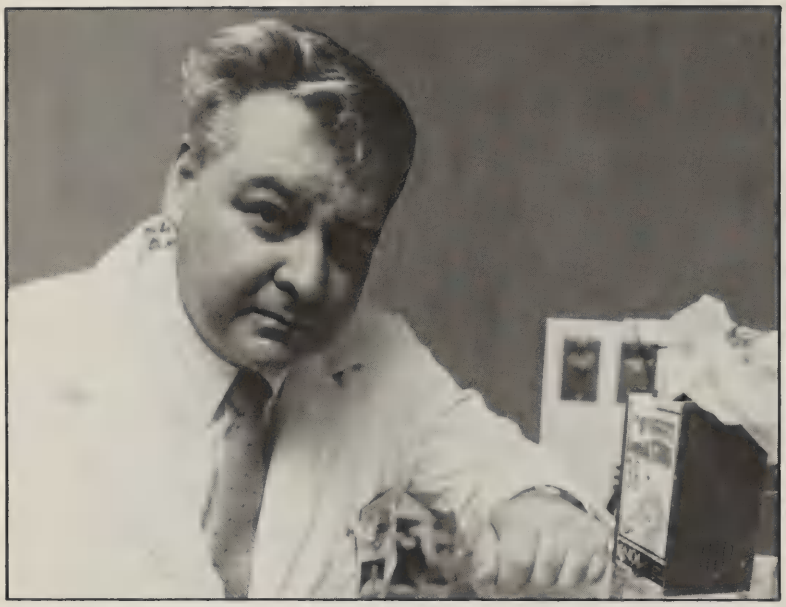
INTERFERON: PRODUCT OF IMMUNE SYSTEM FIGHTS DISEASE

Interferon — a protein which the T-cells produce when they encounter an infection — is being used to treat certain cancer patients. Dr. Elliott F. Osserman, attending physician and director of the Immunoglobulin Laboratory, is investigating the anti-tumor effect of interferon in myeloma, a cancer of the white blood cells that make antibodies.

"If interferon, which is important in combating viral infections, is deficient, it lowers the body's ability to fight disease. Genetic engineering has enabled researchers to produce interferon in the laboratory and to use it as an approach in cancer treatment," says Dr. Chess.

"At Presbyterian, we are using the power of the immune system to diagnose and treat all kinds of illness — from cancer to autoimmune disease."

Rh DISEASE OF THE NEWBORN IS VIRTUALLY ELIMINATED



Infant deaths from hemolytic disease have dropped dramatically as a result of findings by Dr. Vincent J. Freda and a research team.

Two years after bearing her first child, a 26-year-old mother delivered another healthy infant. Both children are spirited and the young mother now is pregnant with a third.

Such ease in building a family was not always possible for child-bearing women with Rh negative blood. If their unborn infants had Rh positive blood, the mothers often became sensitized to their newborn's blood just after delivery. Sensitization occurs when a small amount of the infant's blood enters the mother's bloodstream, where it is recognized as a foreign protein. After delivery, the mother begins to manufacture antibodies against that type of blood.

As a result, any other Rh positive offspring born to her are threatened with a massive immunological onslaught against the blood within the fetus — which could result in anemia, brain damage or death.

Today, an incompatibility between maternal and fetal blood, known as hemolytic disease of the newborn, virtually has been eliminated in the

CPMC: A HISTORY OF CONTRIBUTIONS TO IMMUNOLOG

A flu shot that a school child received at The Presbyterian Hospital this year is based upon the same immunological principles that the Greeks used to protect their countrymen from the plague thousands of years ago.

The basic principle is that someone who comes down with a certain infection builds an immunity to that particular disease. While the ancients were limited to observation of this phenomenon, physicians today know that cells within the body's immune system identify and destroy invading organisms. Once someone has recovered from an infection or has been immunized against an organism, the ability to fight off the disease may last for a number of years and in some cases, may last a lifetime.

The immune system also can harm the body by causing allergic reactions and autoimmune diseases, in which the immune system damages the individual. While medical understanding of the immune system is far from complete, researchers are probing the cells to learn what causes autoimmune disease and to find out what triggers the body to attack itself.

More than 50 years of immunological research at Columbia-Presbyterian Medical Center have yielded many approaches to the recognition and treatment of disease in patients at The Presbyterian Hospital and around the world.

Antibodies, the body's first line of defense against invaders, were first chemically defined at CPMC in the late 1920s by Dr. Michael Heidelberger.

In the 1930s, Dr. Heidelberger studied antibodies that were used successfully to treat the most common form of pneumonia, which at that time, was a major cause of death.

THE 1930s: PH PEDIATRICIAN MAKES ANTIBODY AGAINST MENINGITIS

During the Depression era, pediatrician Dr. Hattie Alexander was treating her young patients and studying the immune system in the laboratory. Her work resulted in the manufacture of an antibody that was effective against a form of meningitis in children.

Dr. Elvin A. Kabat, Ph.D., who began his career at the Medical Center in 1933 and continues as a pacesetter in his field, conducted studies during the 1940s that pointed to the underlying feature of autoimmune disease — that the body could attack its own tissue. His findings were based on studies in laboratory models of a disease related to multiple sclerosis.

Antibodies against steroid hormones were developed here in the 1950s — the result of brainstorming by three scientists riding to Queens in a carpool. Dr. Bernard F. Erlanger, microbiologist at CPMC, Dr. Seymour Lieberman, endocrine biochemist, and the late immunologist Dr. Sam M. Beiser began collaborating as a result. Use of these antibodies

United States. Twenty years ago, this condition was responsible for the deaths of 10,000 infants a year. Today, that number is less than 1,000.

Dr. Vincent J. Freda, associate attending obstetrician/gynecologist at The Presbyterian Hospital, shared in the prestigious Albert Lasker Clinical Medical Research Award in 1980 for finding a way to prevent Rh hemolytic disease.

Working with a research team, Dr. Freda found that antibody inoculations against the Rh positive factor in the baby's blood could prevent Rh negative mothers from forming antibodies against their babies' blood and thereby prevent the disease. But these inoculations won't work after sensitization has occurred.

AFTER BEARING HER FIRST CHILD, A YOUNG MOTHER WAS SENSITIZED

"After having her first child, such a mother was sensitized for life. After that, each infant was affected severely," explains Dr. Freda.

A woman from Israel who had lost three infants to hemolytic disease because she was sensitized was able to deliver a live, healthy baby at The Presbyterian Hospital.

"We were able to time it right. Before the baby was born, we administered an intrauterine transfusion to keep the baby alive. The transfusions had to be repeated every two or three weeks until the infant could be delivered by Caesarean section," says Dr. Freda.

This is one example of many dramatic attempts at PH to save infants who otherwise might have died because their mothers were sensitized.

SOLUTION LINKED TO ANTIBODY'S FIRST APPEARANCE

After establishing an Rh clinic at the Hospital, Dr. Freda found that an antibody made its first appearance just after delivery, rather than during the pregnancy itself.

"Back then, all the experts agreed that Rh disease could not be prevented. The prevailing belief was that two pregnancies were necessary to cause sensitization. However, at PH, we found that Rh sensitization was an all or nothing phenomenon that occurred after delivery. Either it happened, or it didn't, and there was no hidden stimulus or memory as was popularly thought. Armed with this new knowledge, it then became plausible to prevent sensitization by giving Rh antibody to the mother after delivery.

"What we needed was a preparation which contained a powerful concentration of the antibody in a small volume — one that could be given intramuscularly and with no ill effects," says Dr. Freda. "No such preparation was available then, so a member of the team created one. After much testing, we began administering the vaccine within three days after delivery."

Dr. Freda now is conducting a study to determine whether physicians can reverse the condition in Rh negative mothers who already have antibodies against Rh positive antigens, or markers, that can kill their unborn babies.

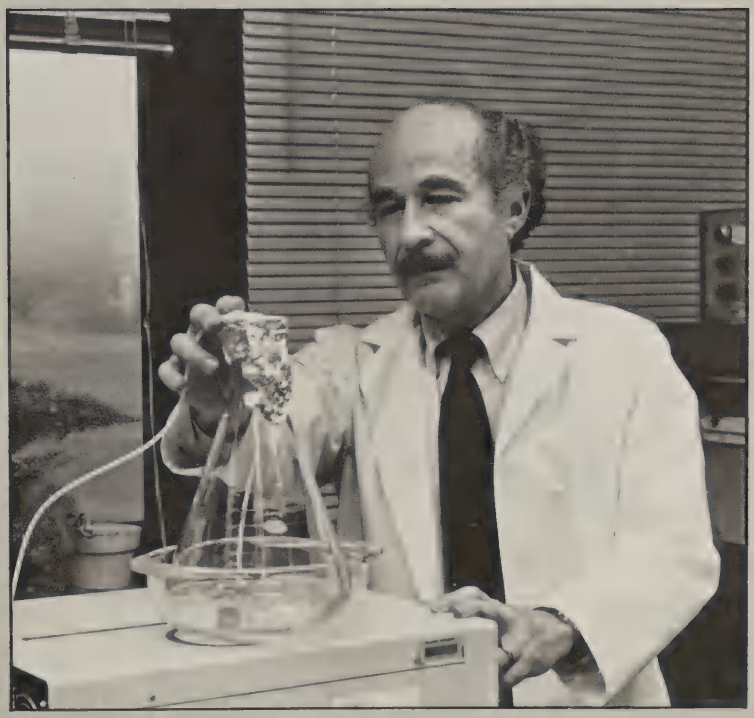
now enables physicians throughout the world to measure steroidal hormones as part of their diagnosis of endocrine disorders.

DISCOVERY HELPS COMBAT DISEASE AFFECTING THE NEWBORN

In the late 1960s, obstetrician/gynecologist Dr. Vincent J. Freda discovered a way to combat a disease in which a mother develops antibodies against her own infant's red blood cells if their blood types are incompatible.

Antibodies to combat the toxic effects of the drug digitalis in cardiac patients were made here in the 1960s by Dr. Vincent P. Butler Jr., director of the Division of Immunology at Columbia-Presbyterian Medical Center, and his team of immunologists.

These contributions to knowledge of the immune system and to the treatment of patients with immune disorders are the hallmark of 50 years of excellence at the Medical Center, which continues today. ■



Creative carpooler: Dr. Bernard F. Erlanger.

ALLERGIES: THE BODY CAN'T SHUT OFF ITS REACTION TO THE ENVIRONMENT

Dr. Marjorie Slankard administers injections to Carmen Santiago to treat her for allergic asthma. Below: a tray of allergen extracts.

For some people, exposure to feathers or fur can trigger an allergic reaction. In others, eating a piece of shrimp can set off a reaction that could be fatal if the person is extremely sensitive to shrimp.

An allergy is an immunologic overreaction to routine substances in the environment. People who react to ragweed pollen, for example, produce too much of a protective substance, called an antibody, against that pollen because they lack the suppressor cells that normally shut off the production of that antibody.

Dr. David J. McConnell, director of the Adult Allergy Clinic at The Presbyterian Hospital, explains the mechanism of a typical allergic reaction — a fate which affects 25 percent of the population at some point during their lifetimes:

"When dust, pollen or animal dander is inhaled, it reacts with the excess amount of antibody on certain cells in the lining of the respiratory tract. This causes chemical substances, especially histamines, to be released. The histamines cause blood vessels to swell and leak fluid, resulting in sneezing, a runny nose, itchy and tearing eyes and sometimes asthma," the allergist says.

ALLERGIES TO FOODS OR DRUGS CAN BE LIFE-THREATENING FOR SOME

A person who is extremely sensitive to a particular food, such as walnuts, could develop a life-threatening condition from eating a pastry with a walnut topping.

Similarly, reactions to drugs can be very dangerous, says Dr. Marjorie Slankard, assistant attending physician. "These reactions can result in anaphylactic shock. The same histamine that caused the ragweed-allergic person to sneeze and get teary eyes is released in such large amounts that it can produce enough swelling in the larynx to cut off the air supply. In some cases, it can cause blood pressure to drop so much that the patient goes into shock.

"Serious reactions that may be life-threatening also can result from the stings of venomous insects. Patients who have a severe reaction to stings should be evaluated and desensitized," she advises.

Treatments for allergies vary, depending on the environment and the severity. The first piece of advice from the allergists is: avoid the source of irritation. "It's sad but true — if your cat makes you sneeze, you really should get rid of it," says Dr. McConnell.

If avoidance isn't practical, patients can take antihistamines or other medications to minimize the symptoms. When this fails, immunotherapy, or allergy shots, may be necessary.

"This means administration of increasing doses of allergens — protein extracted from the offending plant or animal — over a period of years to alter the body's reactions and eventually make the patient more resistant to the irritation," says Dr. William J. Davis, director of the Pediatric Allergy Service.

Meantime, allergies may depart as mysteriously as they appear. "Children suffer from allergies more than adults. As they mature, they may spontaneously lose the allergic reaction," says Dr. Davis. "It may be due to a loss of immune responsiveness to the foreign substances that provoked the allergic reaction in the first place."

PERIPHERAL NEUROPATHY: PHYSICIANS SEEK CLUES TO A MYSTERY DISEASE

A burning sensation in the patient's feet made her feel as if they had been dipped in hot sauce. At other times her feet were numb. Occasionally, she developed weakness, causing her foot to drop limply from her ankle.

The young woman's disability was the result of a disease called peripheral neuropathy. Physicians at Columbia-Presbyterian Medical Center found that when this disease strikes, in some cases, substances called antibodies, which normally protect the body against illness, attack the insulation, or myelin sheath, on the nerves that travel from the spinal cord to the muscles and skin.

For this reason, the affected areas either become numb or a burning feeling occurs.

"This disease can strike in any age group," says Dr. Marcelo R. Olarte, assistant attending neurologist.

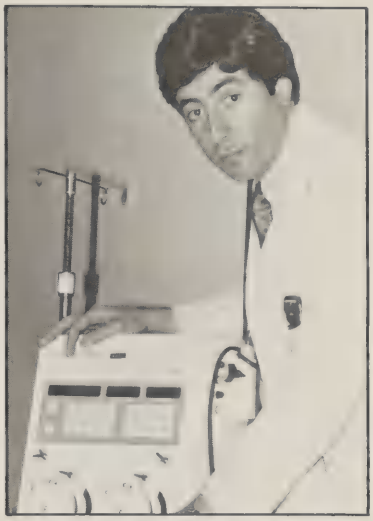
"The cause of the disease varies. It may be due to infection in some patients, or may occur as a result of diabetes or vitamin deficiency in others," he explains.

Treatment may consist of giving drugs to suppress the immune system, vitamin therapy, the administration of hormones, plasmapheresis, or treatment of endocrine disorders, says Dr. Olarte.

"In most cases, we don't know what causes peripheral neuropathy," says Dr. Normal Latov, assistant attending neurologist.

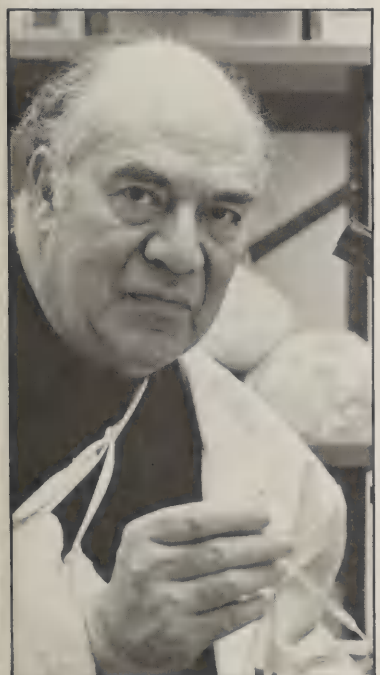
Last year, a test to identify patients with antibodies that attack the insulation around the peripheral nerves was put into use at PH.

"If we can diagnose peripheral neuropathy in the early stages of the disease, we can successfully treat these patients with medications," says Dr. Olarte.



Dr. Marcelo R. Olarte with plasmapheresis machine.

MARKERS ON CELLS DETERMINE AN INDIVIDUAL'S RISK FOR DISEASE



Dr. Benvenuto Pernis: distinguishing between friend and foe in the immune system.

Just as each person expresses his individuality, so does each cell in his body.

"The system is rich — each individual cell has its own molecular profile which helps the immune system to distinguish between friend and foe — 'self' as opposed to foreign matter," says Dr. Benvenuto G. Pernis, microbiologist at Columbia-Presbyterian Medical Center. "This system of markers, or antigens, on the cells works as a communication device for the immune system."

By acting as a communication link, this system — called the histocompatibility system — governs how the body distinguishes between itself and foreign substances. For example, if a virus enters the body, the immune system must identify it. But it couldn't know that it was not part of the body without individuality markers, which are present on each cell in each person from the time of birth.

The system of markers on cells also makes it possible to match — or determine the degree of compatibility — of a donor organ and a patient in need of a transplant. The better the match, the lower the risk of rejection by the patient's immune system.

Researchers have found that these markers play a role in a person's susceptibility to diseases of the immune system. Their discovery has enabled doctors to take a blood sample from a patient and detect the minute signposts that may make getting an autoimmune disease likely, for example, explains Dr. Leonard Chess, director of the Division of Rheumatology.

"We know that if a patient has a certain disease marker, he has a genetic predisposition to getting the disease, but it's no guarantee that the disease will strike," says Dr. Pernis.

For example, if he has the B-27 marker, which is present in most people with ankylosing spondylitis, an autoimmune disease that affects the lower spine, he may have a greater risk of developing the disease.

In his laboratory at the Medical Center, Dr. Pernis studies molecules that make recognition by the cells of the immune system possible.

While identifying individual markers now is used as a diagnostic tool, Dr. Pernis says that in the future, research may show that knowledge of these markers can be exploited in preventive medicine. "Doctors may be able to detect diseases earlier, or possibly even before they show overt symptoms."

CPMC CELEBRATES 50TH ANNIVERSARY OF EDWARD S. HARKNESS EYE INSTITUTE

A scientific program and convocation celebrating the 50th anniversary of the Edward S. Harkness Eye Institute at the Columbia-Presbyterian Medical Center was held on March 30 and 31.

In 1918, Edward S. Harkness established the Commonwealth Fund "to do something for mankind" and to aid his goals for patient care and medical education through close affiliations between universities and hospitals.

The first pledge to begin the Eye Institute project came in 1931. The first patient was seen on January 16, 1933.

The original Institute of Ophthalmology at the Medical Center has been renovated completely. The facility now has modern inpatient areas, three full floors of space for private offices, in addition to an annex which houses research laboratories and outpatient clinics.

Joe Pineiro

Comedian Bob Hope greets Dr. Charles J. Campbell, director of the Ophthalmology Service, after receiving an honorary degree from Columbia University.

HONORARY DEGREES ARE CONFERRED UPON THREE SPECIAL GUESTS

During the convocation, Michael I. Sovern, President of Columbia University, conferred honorary degrees upon three special guests.

Bob Hope was awarded an honorary Doctor of Humane Letters degree. Malcolm Pratt Aldrich, former president and board chairman of the Commonwealth Fund, was awarded an honorary Doctor of Laws degree. Dr. Bradley R. Straatsma, chairman of the Department of Ophthalmology at the School of Medicine of the University of California at Los Angeles, received an honorary Doctor of Science degree.

During a two-day scientific program entitled "Ophthalmology: Current Practices and Future Directions," international specialists addressed currently established methods of diagnosis and management of common and uncommon disorders of the eye.

CONTINUING EDUCATION PROGRAM ADDRESSES AIDS

A one-day program, "AIDS: A Multidisciplinary Approach," was presented on April 10 at the Hospital by the Department of Nursing and the Columbia University School of Nursing. The program on AIDS (Acquired Immune Deficiency Syndrome) had a multi-purpose focus, which included: a review of the disease process, an update of recent research findings, a discussion of nursing care for patients wtih AIDS and a review of other New York City hospitals' infection control protocol for AIDS. Program organizers included: First row, from left: Joanne Merry, R.N., Janet Bissinger, R.N., and Rosa Williams, R.N. Second row, from left: Marianne Burgunder, R.N., and Margaret Fracaro, R.N. Also pictured is Dr. Mario Romagnoli, who was a featured speaker.

FOOTNOTES

MEDICINE: **Dr. Harold C. Neu,** chief of the Division of Infectious Diseases and Hospital epidemiologist, delivered a series of lectures at the Peruvian Medical Society's annual meeting in March in Lima, Peru, during which time he was made an honorary member of the Society.

ORTHOPEDIC SURGERY: **Dr. Charles S. Neer II,** attending orthopedic surgeon, moderated a symposium on "Impingement, Biceps and Rotator Cuff Lesions" at the annual meeting of the American Orthopedic Surgeons, which he serves as president. During the meeting, Dr. Neer also conducted post-graduate courses on shoulder surgery, moderated a scientific session on shoulder surgery and presented a paper on "Shoulder Joint Replacement in the Active Patient" to the American Society of Sports Medicine in Atlanta.

RADIOLOGY: **Dr. Walter E. Berdon,** director of Pediatric Radiology, has been invited to deliver the Leo Rigler Memorial Lecture at the Tel Aviv Medical Center in Israel on May 23. Dr. Berdon, who serves as managing editor of the International Journal of Pediatric Radiology, will discuss "Radiology Imaging Modalities in Congenital Anomalies of the Lung in Infancy."

Dr. Sara Jane Abramson, attending radiologist, delivered a paper on the children's disease histiocytosis-X at the annual meeting of the Society for Pediatric Radiology in Las Vegas in April. Dr. Abramson also presented a paper on sonography in liver disease before the European Society of Pediatric Radiology in Florence, Italy in April.

Dr. Michael J. Marchese, assistant attending radiologist in radiation therapy, was selected to receive the 1984 American Radium Society Resident/Fellow Research Award for radiobiology research performed while he was a radiotherapy resident at the Hospital in 1983. He presented his paper at the society's annual meeting in March.

UROLOGY: **Dr. Jerry Blaivas,** associate attending urologist and director of Neurourology, was the keynote speaker at the Southern Foundation for Education and Medical Research Conference in Urodynamics in Atlanta in March.

IN MEMORIAM

DR. EDWARD J. SACHAR

Dr. Edward J. Sachar, pioneer in studies of depression and the former director of the Psychiatry Service at The Presbyterian Hospital, died March 25 at the age of 50.

The Edward J. Sachar Award Fund has been established in his honor to mark the profound sense of loss felt by the medical community at Dr. Sachar's death. The award is designed to bring to the Columbia University College of Physicians & Surgeons visiting scholars of great distinction or promise in the field of psychiatric research. The fund will consist entirely of gifts made by Dr. Sachar's friends, family, patients and associates.

Dr. Sachar was director of the New York State Psychiatric Institute as well as director of the Hospital's Psychiatric Service. He also was Lawrence C. Kolb Professor of Psychiatry and Chairman of the Department of Psychiatry at P & S from 1976 to 1981.

Dr. Sachar was a specialist in psychoendocrinology, particularly in relation to depression. His work on the way in which hormones influence moods and behavior contributed much to the understanding of the biological markers for depression in adults and children.

He received his B.A. degree from Harvard University in 1952 and earned his M.D. from the University of Pennsylvania in 1956. He was an intern at the Beth Israel Hospital in Boston and a resident at the Massachusetts Mental Health Center. Dr.

Dr. Edward J. Sachar

Sachar trained at the Boston Psychoanalytic Society and Institute and at the New York Psychoanalytic Institute, and taught at Harvard Medical School and Albert Einstein College of Medicine, where he became Chairman of the Department in 1966.

He was a past president of the Psychiatry Research Society. In 1975 he won the Anna-Monika Foundation prize for research in depression and, in 1981, he won the Society of Biological Psychiatry's Gold Medal for research.

Dr. Sachar is survived by his parents, his wife, Hindy, and two brothers, Dr. David Sachar and Howard Sachar.

Those interested in contributing to the fund are asked to send contributions to: The Edward J. Sachar Award Fund, Columbia-Presbyterian Medical Center Fund, Inc., 100 Haven Avenue, New York, N.Y. 10032. ■

PH DIRECTORY QUESTIONNAIRES TO BE MAILED

Work on the PH Alumni Directory is well under way. This summer, all alumni will receive a brief questionnaire with a follow-up request to be sent one month later. The prompt return of these questionnaires is essential so that the information in the directory will be current and complete.

All alumni then will be contacted directly by the Harris Publishing Company to verify information to be listed in the directory and to see whether they wish to purchase a copy. Alumni with current addresses who have not responded to the questionnaires and are not reached by phone by the Harris representatives will appear in the directory with the information provided by alumni records.

Alumni will be listed alphabetically, geographically, and by class year. Each listing will contain name, class year, residence address and phone number, and business or professional information when available. ■

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PH FOCUSES ON AN AGING POPULATION **JULY 1984**

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IMPORTANT NOTICE TO OUR READERS

You are invited to participate in The Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity, unitrust life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information, call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

ABOUT THE COVER

Outside the ARC-Fort Washington Senior Center. Photo by Kasia Gruda.

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THE AGING POPULATION CHALLENGES THE FUTURE OF HEALTH CARE

Old age is revered in some cultures and feared in others. Whether the years are held in esteem or in scorn, the aging process cannot be ignored.

For most of the elderly, the so-called "golden years" often are accompanied by a host of physical ills. As the ranks of Americans over 65 grow from 25 million in 1980 to an estimated 55 million by the year 2030, the future of health care and its cost are major concerns of the elderly.

In the Washington Heights/Inwood community, which surrounds the Columbia-Presbyterian Medical Center, residents have seen five of the area's six hospitals close over the last 15 years. As the number of hospitals dwindled, so did the number of neighborhood doctors. Today, there are less than 45 primary care physicians (including the ones at the Hospital) to serve the community with the largest percentage of senior citizens in New York City.

GERIATRIC CARE: A TOP PRIORITY AT THE MEDICAL CENTER

Because there is such a great need in the community for basic health care for all residents, especially the elderly, the Medical Center has made geriatrics an area of top concern.

Last year, The Presbyterian Hospital's Long Range Planning Committee created a Subcommittee on Geriatrics to examine how the Medical Center can better serve the needs of the elderly.

"When we respond to the elderly patient's needs, we must consider not only the illness, but also the accompanying problems. That includes transportation problems in going to see a doctor, difficulties of living at home alone, getting regular assistance from a visiting aide and managing a lengthy convalescence. The elderly patient's entry into the health care system should be smooth and the delivery of care should be coordinated," says Dr. Barry J. Gurland, director of the Center for Geriatrics and Gerontology at CPMC and chairman of the Subcommittee on Geriatrics.

CPMC PROGRAMS ADDRESS THE NEEDS OF THE ELDERLY

Programs already in action at the Medical Center are addressing these needs. Among them are:

- A medical group practice that serves primarily elderly patients, called Associates in Internal Medicine. AIM has become so popular that it has a two-month waiting list for new patients.
- A new way of looking at a pa-

continued on next page

Rhoda Zucker

The faces of aging America.

tient's problem by using a method called MERGE (Model for Evaluation and Referral in Geriatrics). MERGE allows a multi-disciplinary team to assess a patient's health needs and provide an analysis of how the many disciplines at the Medical Center can treat the patient and his problems.

- A Geriatric Dentistry program to treat senior citizens and to train dental students at the Columbia University School of Dental and Oral Surgery to be aware of the special needs of elderly patients.
- An outreach program into the community through which the Medical Center provides primary health care to the members of a senior center, while at the same time introducing first-year medical students at the Columbia University College of Physicians & Surgeons to the treatment of the multiple health needs of the elderly.
- Geriatric psychiatry groups to help the elderly, in some cases with their home health aides, deal with depression and any emotional or health problems.
- Community health education and geriatric psychiatry programs in the community.
- Courses and seminars for Columbia's School of Public Health and other departments.

Medical student William Adams examines Conchita Puente at the ARC-Fort Washingto Senior Center.

PH MODERNIZATION WILL PROVIDE NEW SERVICES FOR ELDERLY PATIENTS

Now that these programs have been established, the Medical Center is looking ahead to the future. Many services designed with the elderly in mind will be provided under the recently approved $496 million modernization program for the Hospital.

"As the modernization program becomes a reality over the next few years, the Medical Center's neighbors in the Washington Heights/Inwood community, as well as patients from across the nation and the world will receive the finest, most appropriate and most cost-effective health care available anywhere," says Dr. Felix E. Demartini, president of The Presbyterian Hospital.

"The modernization will enable us to continue to set new standards for health care, with a special eye on meeting the needs of the growing elderly population," he explains.

To accomplish this, the Medical Center will create: day care and home care programs for chronically ill and disabled elderly patients who can live at home with professional assistance; an 80-bed nursing home specializing in rehabilitation and geriatric psychiatry, which will train long-term care specialists; a network of primary care physicians to rebuild the dwindling number of doctors who serve the more than 180,000 people who live between 155th and 220th streets in Manhattan (Community District 12-Washington Heights/Inwood).

The sheer size of the Medical Center may be intimidating to some visitors, but to the elderly, a visit to a clinic or a doctor may inspire fear. A 78-year-old woman was concerned that she wouldn't know where to go when it was time for her doctor's appointment. A 71-year-old Hispanic woman who speaks little English was afraid that people would become impatient with her slow, hobbling walk and her poor command of the language. Both women were worried about how much their treatments would cost.

Dr. Barry J. Gurland, director of th Center for Geriatrics and Gerontology c CPMC.

Dr. Rafael A. Lantigua serves as consulting physician at the ARC-Fort Washington Senior Center.

For the two women, who became patients at PH after receiving health screenings at the ARC-Fort Washington Senior Center, their fears were groundless. Each woman was accompanied to her appointment by a medical student who volunteers part of his time during the year to work with the elderly and to become familiar with their many health concerns.

Using a pre-printed format, the students take a complete medical history of each patient and later present and discuss the cases with Dr. Rafael A. Lantigua, assistant attending physician on the PH Medical Service. When it is time for their appointments at the AIM group practice at the Medical Center, the students accompany their patients, make sure that any prescriptions are filled and even escort the patients home.

AIM HELPS KEEP PATIENTS FROM GETTING LOST IN THE SYSTEM

"This helps keep the senior citizen from getting lost in the system," says Dr. Lantigua. "Some patients who go to the senior center may neglect some chronic health problems because they are afraid of how much it will cost. If a patient doesn't have Medicare or Medicaid, we treat him until he receives his coverage.

"Since the AIM practice was started, demand for services has been high. Our waiting list for the first appointment is more than two months long."

AIM is popular because it offers a unique way of delivering care. Twenty-one doctors affiliated with the Medical Center as well as nurse practitioners and other health care workers offer a coordinated system of general medical care.

Each patient has a personal physician who is responsible for his or her care. Physicians in the practice are available by telephone 24 hours a day. If a patient has a medical problem that requires the care of a specialist, the AIM physician will arrange the appointment.

Before AIM was created in 1979, the problems of delivering care to the elderly were reviewed carefully, says Dr. Oliver Fein, director of the AIM practice. "A study of the patient population in General Medicine (Outpatient) Services showed that more than 50 percent of all patient visits were by people over age 65.

"AIM is based on the principles of primary care which include continuity, access, availability and coordination of care. Each patient in AIM has a personal physician. If hospitalization is required, the patient is admitted as the private patient of that physician. For geriatric patients, this is particularly significant since hospitalization takes the patient out of familiar surroundings — if the doctor remains the same, it makes a big difference. The long and short of it is that AIM is a group practice, not a clinic," says Dr. Fein.

Dr. Lantigua, who visits the ARC-Fort Washington Senior Center once a week as a consulting physician, says: "By linking AIM with the senior center, the Hospital can provide primary care in the community and not just at the Medical Center."

PREVENTIVE CARE IS EMPHASIZED IN OUTREACH PROGRAM FOR SENIORS

Much of the care that is given at the senior center is preventive. Through health education and screening programs, patients with problems are identified and help is given.

Igal Jellinek, executive director of ARC-Fort Washington, says: "There are many people who aren't hooked up with the services of a physician and who need medical treatment. In the past, they were neglected, but

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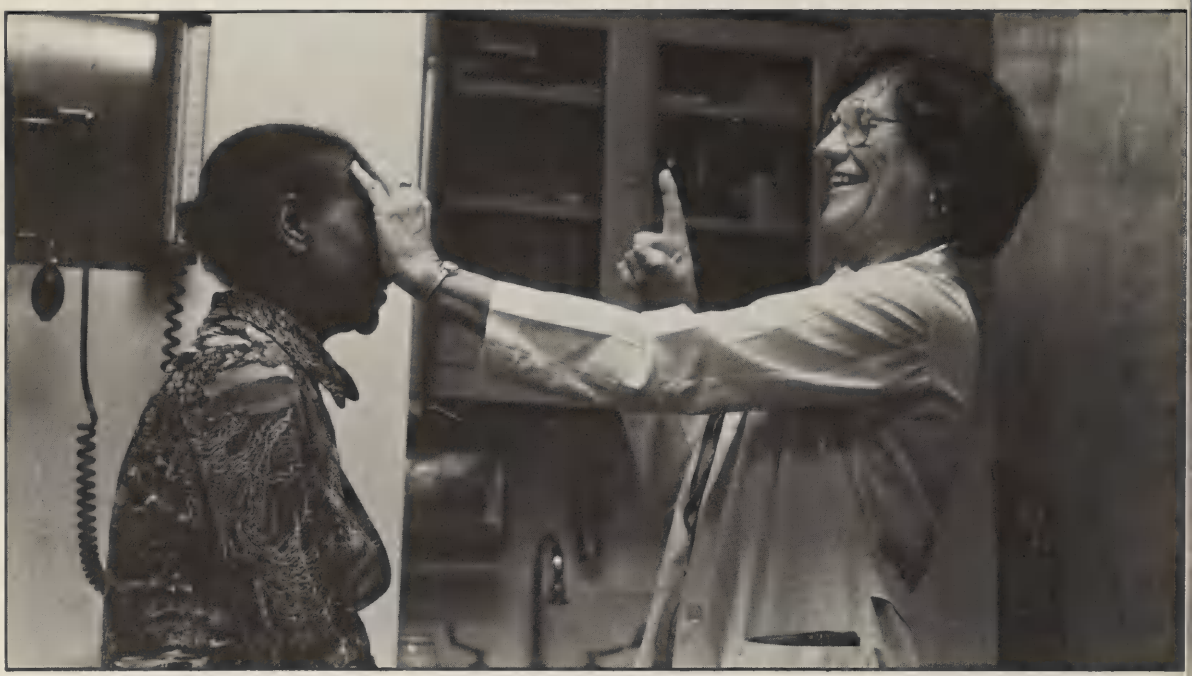


Shirley Packard, R.N., Geriatric Nurse Practitioner, tests Martha Perry's visual acuity.

our connection with the Medical Center now funnels them into the services they need.

"The whole health approach offered here makes us more of a multiservice center. A nurse practitioner, psychiatrist and occupational therapist who visit the center on a regular basis refer patients to the AIM practice or community physicians when it is necessary. Because senior centers are places where large numbers of people congregate, we are able to work with the Medical Center to help provide innovative health care," says Mr. Jellinek.

Shirley Packard, R.N., Geriatric Nurse Practitioner, and coordinator of the MERGE program in AIM, says: "By the time a person reaches age 75 and has six or more diseases, in addition to having suffered personal losses and social problems, he often needs to be treated by many different health care providers. Although medicine is important, equally so is the role of the nurse, the social worker, nutritionist and psychiatrist. Often, it takes a whole entourage to help the patients."

Through the detailed questions that are part of the MERGE interview, Ms. Packard is able to create a profile of the patient that enables the staff to offer help with everything from his medical and dental problems to his housing and transportation needs.

"To us, primary care for the elderly takes in the patient's life as a whole, including the biological, spiritual, psychological and social aspects," adds Ms. Packard.

"Because MERGE offers a systematic way of identifying problems and putting them into priorities the use of the specially created questionnaire gives us a wealth of data about elderly patients. By drawing a profile of each patient and identifying any common problems, we can use this procedure to predict likely health problems as they might arise and interventions and referrals patients will need."

EVEN MORE INNOVATION IS SOUGHT "TO HELP PEOPLE AGE WELL"

From these and other programs now in motion at the Medical Center it is hoped that even more innovative ways to help geriatric patients can be developed.

"Older people have taught us that it takes more than one discipline to manage their care," says Ms. Packard. "By working together, all of the services and disciplines can help the elderly to find ways to solve their problems. That's what we aim to do — to help people age well."

GERIATRIC PSYCHIATRY PROGRAM USES 'COFFEE KLATCH' APPROACH

Paying the electric bill isn't much of a problem for most folks. But for a senior citizen with declining eyesight, emphysema or a fear of being an easy target for a mugger, basic bill paying may be difficult.

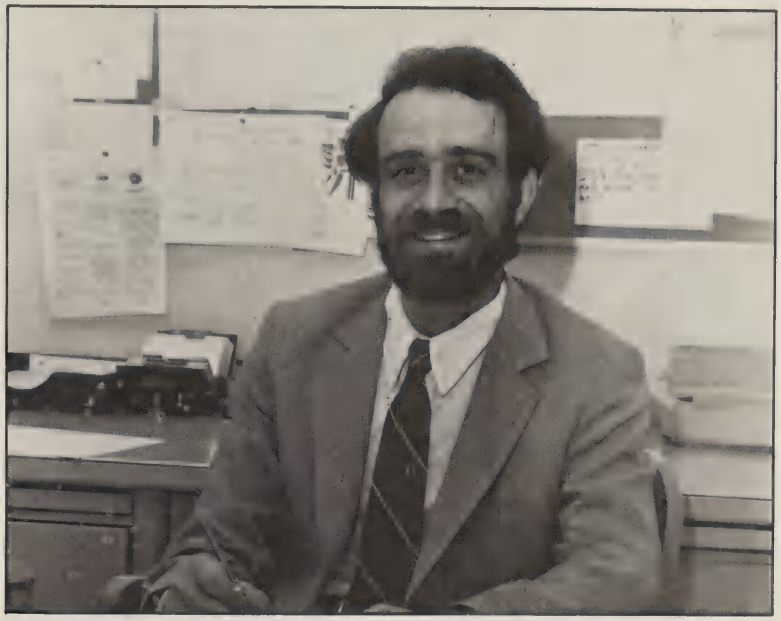
Handling such routine tasks of daily life is only one of the challenges that senior citizens with a variety of problems routinely discuss in geriatric psychiatry groups offered at The Presbyterian Hospital.

"The seniors who join in these groups on a weekly or bi-weekly basis share tips on how to deal with certain doctors. They've been able to get a fellow senior citizen to admit that an adult son or daughter is guilty of parent abuse and to resolve to do something about it. They even helped a 73-year-old woman decide whether she should take the risk of marrying a third husband," says Dr. John J. Barsa, director of the Geriatric Psychiatry program at PH.

The pre-marital counseling proved successful. The group received a postcard from the new bride on her honeymoon. She's happily married and has become even closer to her friends in the group.

Whatever the problem, the group joins in and participates, offering suggestions. Despite all of the participants' initial fears about being in such a group, most have found that group therapy can be pleasant and rewarding.

"The group approach works well for senior citizens, because this generation of elderly is anti-psychiatry. In their day, when someone went to a mental hospital, he stayed there forever. Things have changed considerably since then," says Dr. Barsa.



Dr. John J. Barsa: seniors find that group therapy is pleasant and rewarding.

NUMBER OF GROUP PARTICIPANTS DOUBLES

The program, which has grown from 80 patients in 1981 to more than 185 this year, is based upon what Dr. Barsa calls a "coffee klatch model."

Elderly patients now are able to take advantage of seven groups offered by the Geriatric Psychiatry Service. Among them are groups for patients who have lost part or all of their eyesight, for those who have chest illnesses, such as emphysema or lung cancer, for those with mood disorders, and for those who have a range of illnesses from cancer to arthritis.

A group that deals with the problems of daily living ponders many considerations of being elderly and alone. An 82-year-old man who always felt that having a large amount of cash in his pocket gave him a sense of well-being sought the group's advice on how much money to carry when he leaves his apartment. They told him: carry enough to buy what he needed, but not too much cash. A gentleman, 72, formed a network of contacts on his block so that people would know and remember him. He now feels more secure about living alone because he feels that his neighbors are friendly and concerned about him.

DROPOUT RATE WAS HIGH BEFORE GROUPS WERE FORMED FOR SENIORS

Before the elderly oriented groups were formed, senior citizens were placed in groups with patients of all ages. But they kept dropping out, because their concerns seemed out of step with those of teen-agers dealing with unwanted pregnancies or drug abuse. Now that groups are composed only of seniors, there are very few dropouts.

Groups have been expanded to include people with emotional difficulties who are reacting to various life concerns, such as the death of a spouse, grown children who are a disappointment to them and the loss of health that can accompany the aging process.

"A major thrust of the program is to help senior citizens get the most out of their later years," says Dr. Barsa. "By feeling comfortable in a group and by learning how to share their experiences, the members find ways to overcome their problems."

Emotional distress over a deceased spouse became so strong in a 76-year-old woman, that every year she required hospitalization for her depression. Since joining a group, the woman has become well-adjusted and hasn't been re-admitted.

Depression is one of the major problems faced by the elderly. "Very often, an elderly person won't even know he's depressed. The others in the group pick up the signs first. When there is a diagnosis of depression, we can prescribe medication, group therapy or treatment that involves working with the patient's family."

Since beginning its geriatric psychiatry programs more than three years ago, the Hospital has become what Dr. Barsa describes as "an agency offering many outreach programs for senior citizens. Through this, they make many personal contacts and they retain the ability to live independently at home. For some, the people in the group are the most important in their life."

UPKEEP OF THE BLOOD VESSELS IS GOOD INSURANCE AGAINST ATHEROSCLEROSIS

Just as the upkeep of a house can increase its value and lifespan, proper maintenance of the body's network of blood vessels can help to improve the quality and length of a person's life.

Coronary artery disease, or atherosclerosis, is the process underlying most forms of heart disease, as well as stroke. It is the leading cause of death in the United States.

In atherosclerosis, the inner walls of the arteries, especially those that supply the heart, become thickened and clogged with deposits of cholesterol and other substances that form areas called plaque. As plaques grow larger, they eventually narrow the blood vessels. If this narrowed channel is blocked by a blood clot, the area normally supplied by the vessel is deprived of blood. If the heart is affected, the result is a heart attack. If an artery leading to the brain becomes plugged, a stroke can result.

"Atherosclerosis tends to progress with age, so it is more prevalent in the elderly, but it also can appear as early as the teens and the 20s," says Dr. DeWitt S. Goodman, attending physician and director of the Specialized Center of Research (SCOR) in Arteriosclerosis at Columbia-Presbyterian Medical Center.

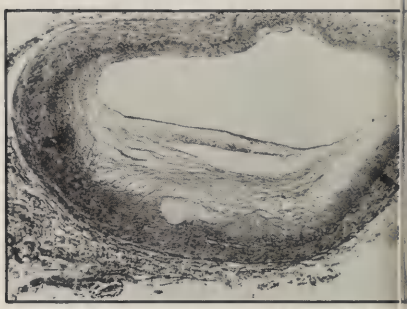
"Large clinical studies have shown that by treating certain risk factors, the risk of heart disease can be lowered. The risk factors include high blood pressure, cigarette smoking and high cholesterol levels in the blood."

PLAQUE BUILDUP MAY GO UNNOTICED UNTIL A HEART ATTACK OCCURS

Because this process of plaque buildup continues unnoticed over a period of years, a person may not know that one of his coronary arteries is blocked until a heart attack strikes. By the time this first symptom appears, it may be too late to correct the condition.

Researchers at CPMC are trying to influence this disease process so that it can be controlled. Under the SCOR

(1) Cross-section of normal coronary artery



(2) Deposits form in inner lining of artery.

GERIATRIC DENTISTRY: A NEW APPROACH TO AN AGE-(

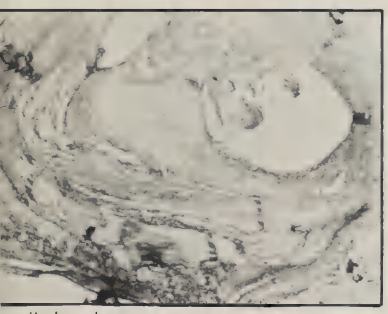
Douglas McAndrew

The geriatric dentistry team reviews dental X-rays. From left are: Marianne Muench, dental hygienist, Zelda Diatlo, social worker, and Dr. Randi Tillman.

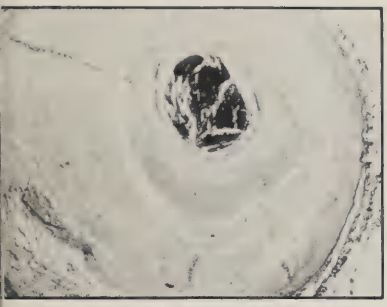
Learning to sit in a dentist's chair for a one-hour appointment without squirming is a lesson in the art of patience for most people. Elderly dental patients may not be as restless, but they also may lack the ability to sit at length because of arthritis or a need to take restroom breaks.

"The technical aspects of dentistry for elderly patients aren't very different from dental treatments for anyone else. But the approach and treatment plan may be different," says Dr. Randi Tillman, director of the Geriatric Dentistry Program at the Columbia University School of Dental and Oral Surgery, part of Columbia-Presbyterian Medical Center.

Elderly patients with a range of health problems often take several medications. "The dentist must know the medications a patient is taking and determine how a drug will interact with novocaine, or other medications the dentist may use. Novocaine, for example, may contain



posits harden.



od clot blocks the narrowed channel.

Courtesy American Heart Association

program, sponsored by the National Institutes of Health, physicians are searching for ways to prevent atherosclerosis.

SCOR physicians are following about 400 patients who are at high risk for coronary artery disease. The program's research clinic is a major referral center for patients with lipid disorders, especially people with high cholesterol.

Among those being treated and studied are a 29-year-old Long Island woman with a high cholesterol level who called SCOR because she was worried about her 6-year-old daughter's abnormally high cholesterol count. The woman's brother recently died of heart disease at 31. After hearing of this family's history of heart disease, Dr. Goodman told the woman to bring her whole family to the Medical Center for testing.

Clinical trials of a promising experimental drug called mevinolin (not yet approved by the Food and Drug Administration) to lower cholesterol levels are scheduled to begin here in July. Such drug trials are only one part of SCOR's work at CPMC.

In the laboratory, scientists are looking at how cholesterol and other lipids are normally or abnormally transported in the blood. They also are asking what regulates cholesterol levels and how these levels affect arterial tissues. Cells that line the arterial walls are being studied in tissue culture to determine how the cholesterol and other deposits begin to accumulate.

"In the United States, I'd venture a guess that virtually everyone has a degree of atherosclerosis," says Dr. Goodman. "But the amount can be influenced by eating foods low in cholesterol, by controlling blood pressure and by not smoking. A change in any of these factors can help add years to a person's life.

"Instead of waiting to treat people when they suffer heart attacks, our goal is to treat them first and prevent the damage of atherosclerosis from shortening their lives — that's how we'd like to see the future." ■

ROBLEM

epinephrine, a medication which constricts the blood vessels and concentrates the novocaine in one area. If a patient is taking certain cardiac drugs, the dentist may not be able to use this type of medication," she explains.

The elderly probably have the greatest oral health needs of the entire population, yet they receive the least care.

"Money is a factor, but beyond that, the elderly often don't perceive the need for dental care. They feel that losing their teeth is a natural part of aging. So they just don't go to the dentist," says Dr. Tillman.

Plaque, the invisible substance that builds up on teeth, causes most tooth decay and periodontal disease. Studies have shown that the same amount of plaque will cause more of a problem in someone over 65 than in a younger person, says Dr. Tillman.

"All patients are encouraged to brush and floss their teeth to remove plaque," says Marianne Muench, dental hygienist and geriatric dental program manager. "We ask students to modify traditional oral hygiene procedures to accommodate any physical limitations."

When a patient over 65 first visits a clinic, a fourth-year dental student does a workup to obtain information about the patient's medical, financial and family status, and his dental and psychological needs.

Other members of the geriatric dentistry team participate in the patient's care, including a Hospital social worker, a dental hygienist and a gerontologist.

The new geriatric dentistry program was developed jointly with Dena Fisher, director of Social Work Services at The Presbyterian Hospital. The program is one of 10 in the United States that is designed for elderly patients.

Zelda Diatlo, social worker, teaches dental students how they can help meet some of the social needs of the elderly.

"Dentists may be able to identify many patient needs in addition to their dental problems. Since the dentist may be the primary health care provider for an elderly person, he may be the first to discover a medical, psychological or even family problem. The geriatric team can provide assistance with such concerns and make referrals, if necessary. But first, dentists must be made aware of these problems and what to look for," says Dr. Lynn Tepper, gerontologist and research associate at Columbia's Center for Geriatrics and Gerontology.

"Nutritional counseling is an important aspect of care for the elderly patient. A nutritional assessment is part of the team's evaluation," says Ms. Muench.

"We hope to ensure that the dentists of tomorrow are well prepared to meet the many needs of a steadily increasing geriatric population," adds Dr. Tillman. ■

ALZHEIMER'S DISEASE: CPMC PHYSICIANS PROBE THE CHEMISTRY OF MEMORY

The hostess entertaining at a dinner party for six rose from the table to get a guest a fork. Halfway through the door to the pantry, she had forgotten why she left the table.

A 32-year-old man who wanted to return to Manhattan after working on the West Coast lined up several promising job interviews during a trip East. Although his trip was planned around finding a job, he forgot the packet of resumes he planned to give to prospective employers.

Such instances of forgetfulness happen to everyone on occasion, especially when a person is preoccupied or depressed. But when a person begins to forget what he just had for lunch, the name of a longtime friend or how to do his job, it may signal the presence of a more serious problem.

Memory loss that gradually grows more severe usually is the first sign of Alzheimer's disease. As this disorder progresses, a patient's ability to speak and communicate becomes impaired. A change in personality may occur — a person who is normally gentle and soft-spoken may become hostile. Normal attention to personal hygiene may disappear. Some Alzheimer's patients no longer want to eat.

DEPLETED SUPPLY OF NEURONS AFFECTS MEMORY

When Alzheimer's disease strikes, the nerve cells in the brain that control memory stop working.

"Nerve cells deteriorate in the brain, especially in certain areas of the cerebral cortex, an area that controls certain intellectual functions," says Dr. Richard Mayeux, associate attending neurologist at The Presbyterian Hospital.

Researchers still don't know what causes the disease, which first was described in 1907 by Dr. Alois Alzheimer, a German physician. As the ranks of older Americans continues to grow, so does the incidence of Alzheimer's disease, which afflicts more than 2 million Americans, or 11.4 percent of the population over 65.

"Very little is known about the natural history or evolution of Alzheimer's disease. We're trying to predict the course of the disease," says Dr. Mayeux.

PROGRESSIVE DEMENTIA OVERTAKES MOST ALZHEIMER'S DISEASE PATIENTS

More than half of all patients with Alzheimer's disease have slowly progressing dementia, or mental deterioration, over a period of five or six years. "A second form of the disease is considered to be less severe, that is, the disease doesn't progress very much. The 10 percent of all Alzheimer's patients affected with this 'benign' form of the disease can function well and even may be able to live independently," Dr. Mayeux says.

"In another form of Alzheimer's, the disease begins with brisk muscular jerks in the arm or leg. This usually is associated with a rapid decline in intellectual ability and the performance of the simple tasks of daily living. A fourth form of the disease appears to be associated with some of the features of Parkinson's disease, especially slowness of movement, difficulty walking and muscular rigidity."

Physicians diagnose Alzheimer's disease by taking a complete medical history, a complete clinical examination, blood tests and a CT scan. After ruling out such disorders as stroke, endocrine diseases, chronic anemia, depression, head injuries and tumors, they may be able to make a diagnosis of Alzheimer's disease. There is no specific test for Alzheimer's disease.

Dr. Lucien J. Cote, attending neurologist at the Hospital, and director of research in the Department of Rehabilitation Medicine at the Columbia University College of Physicians & Surgeons, says:

"The word disease makes it seem that Alzheimer's disease is due to a single cause. But it could be caused by many factors, such as an immune reaction, a virus, a hereditary link or a toxin."

RESEARCHERS STUDY THE ROLE OF AN ENZYME ESSENTIAL TO MEMORY

Much attention now is being focused on acetylcholine, a chemical compound that helps transmit nerve impulses essential to learning and memory.

"We think that cells that make acetylcholine in the brain may degenerate. Part of the cell mem-

COPING WITH ALZHEIMER'S DISEASE: FRUSTRATIONS FOR PATIENT AND FAMILY

Because Alzheimer's disease is a form of dementia that strikes even highly productive, intelligent individuals, coping with the disease can be frustrating for both the patient and the family.

"Spouses can deal with physical illness relatively well, but when confusion and loss of memory occurs, it becomes a difficult situation for the family. For instance, a husband with Alzheimer's disease who may accuse his wife of hiding or stealing his possessions, or of not feeding him just minutes after eating a home-cooked meal," says Dr. Lucien J. Cote, attending neurologist at The Presbyterian Hospital.

At PH, the Social Work Services Department has special groups to offer guidance and support to the families of patients with debilitating diseases, including Alzheimer's disease.

"Family members of Alzheimer's patients can discuss the difficulties of caregiving in a group that offers practical help and emotional support," says Marlene Cooper, coordinator of Social Work Services to the doctor's private offices at the Hospital.

"Issues of protection of finances, living wills, respite care (an interim period in which the patient's family can take a vacation), home help, reality orientation (therapy to keep a patient familiar with the details of daily living) and community programs for patients also can be addressed. Through the group experience, health care providers have an opportunity to share the burden of grief and the conflicts inherent in facing a loved one's deterioration," says Ms. Cooper. ■

Dr. Lucien J. Cote, at left, and Dr. Richard Mayeux analyze spinal fluid in patients with Alzheimer's disease.

brane contains choline, so the cell may destroy its own membrane in an attempt to maintain the level of acetylcholine," says Dr. Mayeux.

Lecithin, a lipid that occurs naturally in a variety of foods such as eggs and peanuts, is being studied for its possible role in the brain's production of acetylcholine. Lecithin forms choline, which brain cells use to make acetylcholine.

Clinical trials of new drugs for Alzheimer's patients are scheduled to begin at Columbia-Presbyterian Medical Center in August. In one study, lecithin will be administered to patients in the form of a noodle soup and will be given in conjunction with physostigmine, a substance that occurs naturally in some plants. Physostigmine blocks an enzyme that rapidly breaks down acetylcholine into choline and other products. The choline that is formed is recycled to make more acetylcholine available.

Another clinical trial to begin in August will combine lecithin and a substance called carnitine. This combination is designed to give the cells that form acetylcholine an additional source of substances to make acetylcholine, Dr. Mayeux explains. Carnitine is a carrier molecule that transports an essential ingredient for the production of acetylcholine from choline. When the carnitine reaches the nerve cells, it is combined with the choline from the lecithin to form acetylcholine.

THE CHEMISTRY OF MEMORY REMAINS A PUZZLE

In his laboratory, Dr. Cote is studying the biochemical changes that occur in the blood and spinal fluid of Alzheimer's patients. "We don't know much about the chemistry of memory. But we know that a sequence of changes take place to allow the brain to store information.

"In Alzheimer's disease, short-term memory, such as the ability to recall what one ate for breakfast that day, is affected first. Remote memory, or recalling the route a person traveled to high school 20 years ago, is stored in the brain in a different way from short-term memory. Remote memory usually is not impaired in Alzheimer's disease until the later stages of the disease," says Dr. Cote.

Although short-term memory tends to fail first in Alzheimer's disease, nothing concrete is known about short-term memory, explains Dr. Cote. "It appears that the signal to the brain hasn't settled permanently or converted to a permanent form of storage — but we don't know why. Short-term memory is thought to be a shower of electrons that rapidly appears and disappears in the brain — unless the information is intended for permanent storage," Dr. Cote adds.

Recent research findings have yielded clues about an area inside the brain called the nucleus basalis

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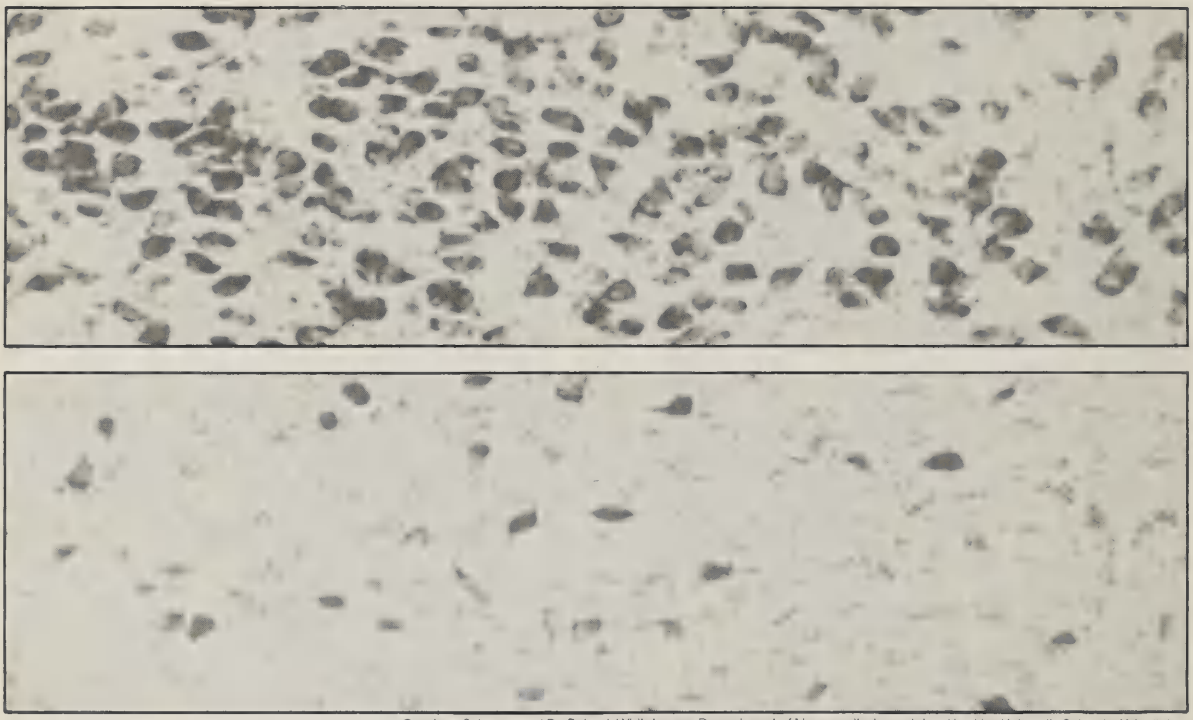


Courtesy *Science* and Dr. Peter J. Whitehouse, Department of Neuropathology, Johns Hopkins University School of Medicine

Top: the normal population of cells in the area at the base of the brain containing acetylcholine. Bottom: depletion of brain cells containing acetylcholine in a patient with Alzheimer's disease.

of Meynert. It is there that many nerve cells which make acetylcholine originate.

"These cells connect with other areas in the brain, especially those responsible for short-term memory processing. A disturbance in this area can cause major changes in the memory processing system because it reduces the level of acetylcholine significantly," says Dr. Cote.

Physicians also have been looking at the blood of Alzheimer's victims to determine if there is a chemical marker that will signal the presence of the disease.

"A study of the genetics of Alzheimer's disease showed that people with an inherited type of blood protein are six times more likely to develop Alzheimer's disease. This may lead us to a marker for the disease," says Dr. Mayeux.

Research efforts also include studies that one day may enable doctors to predict the incidence of Alzheimer's disease through regional cerebral blood flow studies. Such a study allows doctors to make a map of the blood flow in the brain.

"There's a pattern of blood flow in Alzheimer's disease that is predictable. There's an area of decreased blood flow that may be related to degeneration of parts of the cerebral cortex," Dr. Mayeux adds.

APPRECIATING THE PSYCHOLOGICAL ASPECT OF ALZHEIMER'S DISEASE

"The psychological aspect of the disease often is underappreciated," says Dr. Cote. "While the family may find it hard to cope with a loved one who turns hostile, Alzheimer's patients themselves experience a large degree of frustration. An Alzheimer's patient often has a look of panic. He senses that he can't function and finds this stressful. He attempts to communicate how he feels, but is unable to because he has lost the words he needs to express himself. Even his ability to point to an object can be impaired."

Unfortunately, researchers have not yet found a treatment for Alzheimer's disease. In Dr. Cote's opinion, this disease is the No. 1 crisis in medicine: "Medical advances have enabled us to cure other diseases and lengthen the human lifespan. However, it also is increasing the number of patients with Alzheimer's disease."

VISION LOSS NEED NOT ACCOMPANY AGING

When a 75-year-old man broke his reading glasses, he decided it was time to visit an ophthalmologist. He didn't care much for making doctor visits, and he hadn't visited a physician in more than seven years.

"By the time he decided to see a doctor, his neglect left him blind in one eye. Advanced glaucoma produced changes so subtle that he didn't realize there was damage until he almost lost his vision completely," says Dr. Martin L. Leib, assistant attending ophthalmologist at The Presbyterian Hospital. "Fortunately, the vision in his better eye could be preserved."

Such damage often is unnecessary, says Dr. Leib.

While eye disorders can occur at any age, certain conditions become more prevalent as a person grows older. Among the most common are glaucoma, cataracts, macular degeneration, changes in the normal position of the eyelid that cause it to droop, to turn inward or outward, and a disease called temporal arteritis in which blood vessels around the eye become inflamed.

GLAUCOMA: INCREASED PRESSURE INSIDE THE EYE

Glaucoma, the leading cause of blindness in the United States, is more likely to occur after a person turns 50. It often is discovered when a patient visits an ophthalmologist for an unrelated problem. This condition occurs when pressure in the eye builds up as a result of interference with the eye's normal drainage system. As the pressure increases, it can compress and damage nerve fibers and blood vessels.

From its onset, chronic open angle glaucoma has virtually no symptoms and may not even be noticeable. If it is left untreated, it can cause irreversible damage to the optic nerve.

When glaucoma is detected early, it can be treated with drops that affect the production and drainage of fluid. When drops are ineffective, oral medications, such as diuretics, may be necessary to help reduce excessive fluid in the eye.

"A new addition to glaucoma therapy is the argon laser. With this technique, several laser burns are made in the tissue near the drainage system of the eye, where the cornea meets the iris. As the tiny slits heal, theoretically, they reopen the meshwork of tissue through which fluid must flow into and out of the eyeball," says Dr. Leib.

Acute angle closure glaucoma occurs suddenly and if it is not treated immediately, the patient can lose his eyesight. Symptoms of such an attack include pain in the eye and the area above the eyebrow, blurred vision, colored halos around lights, nausea and vomiting.

Because acute angle closure glaucoma is likely to affect the other eye, preventive treatment is necessary to protect it, says Dr. Leib.

MACULAR DEGENERATION: SECOND LEADING CAUSE OF BLINDNESS

Fine vision is controlled by the macula, a small area at the center of the retina, the inner lining of the eye that transmits visual messages to the brain. When macular degeneration occurs, there can be a serious loss of vision.

Most cases of macular degeneration begin after age 60. Patients usually retain some vision, although some may become legally blind. There is no treatment to prevent this form of the condition from damaging vision, says Dr. Leib.

A second form of macular degeneration is associated with neovascularization, in which new blood vessels form beneath the macula and leak fluid. Symptoms of this form of macular degeneration are blurred vision, distortion of images and a blank spot in the central field of vision.

"Laser treatment can halt the damage in the neovascular form if the process is detected early," says Dr. Leib.

CATARACTS ACCOMPANY THE AGING PROCESS IN MOST PEOPLE

The likelihood of developing cataracts increases in people over 55.

Normally, the lens inside the eye is clear. When a cataract forms, the lens gradually may become so opaque that light no longer can pass through it, resulting in a decline of vision. When cataracts first appear, they may produce a mild visual disturbance. Eventually, this affects daily living by interfering with distance perception and the ability to read.

Surgical removal of the clouded lens is the only way that physicians can treat advanced cataracts. "After we remove nature's optical system, it must be replaced with something — an intraocular lens, an extended-wear contact lens or a pair of eyeglasses."

Many cataract patients have a new lens implanted as a part of routine cataract surgery. When an implant is not possible, contact lenses that can be left in the eye for up to three months can help restore vision.

continued on next page

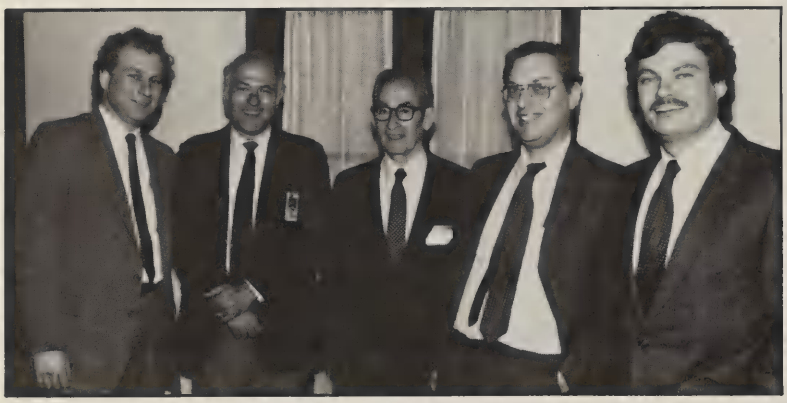
Ophthalmologist Dr. Martin L. Leib examines Beatrice McCarthy, 89, following cataract surgery.

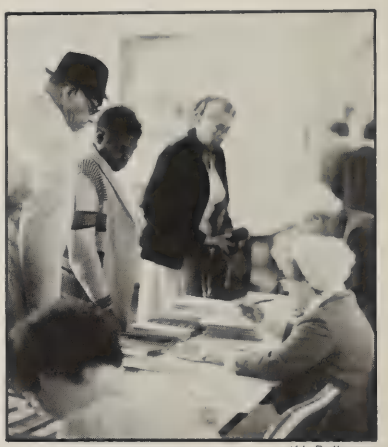
NEWSBRIEFS

ANNUAL HEALTH CARE CONFERENCE FOCUSES ON SENIOR CITIZENS' CONCERNS

More than 200 senior citizens attended The Presbyterian Hospital Community Health Council's Fourth Annual Health Care Conference for Seniors cosponsored by The Presbyterian Hospital on May 11. The issue "Medicare: Problems? Solutions" was the focal point of the conference.

Guest speakers included: John Wren, director, Policy Analysis Unit, New York State Office of the Aging; David Nexon, Senior Minority Council, Labor and Human Resources Committee, U.S. Senate; Igal Jellinek, co-chairman, Washington Heights/Inwood Council on Aging; David Ginsberg, director, Office of Planning at PH, and Dr. Albert E. Blumberg, of the PH Community Health Council, who served as moderator.





K.I. Rothman

Above: senior citizens register for the conference. Conference speakers included, from left: Igal Jellinek, David Ginsberg, Dr. Albert E. Blumberg, David Nexon and John Wren.

VISION LOSS NEED NOT ACCOMPANY AGING

continued from page 11

OPHTHALMIC PLASTIC SURGERY CAN CORRECT FAULTY EYELID MUSCLES

Ophthalmologists often must perform plastic surgery when the normal position of the eyelid changes and interferes with vision and function.

Ptosis, or drooping of the eyelid, can be so severe as to shut out vision severely. About 25 percent of those over 60 are affected with some degree of this condition, says Dr. Leib.

Drooping results when a muscle that travels from the area behind the eyeball down into the eyelid loses its elasticity. The condition can be cured surgically.

When the eyelid loses its elasticity, it either may turn inward or outward, in addition to ptosis.

If the lid turns inward, the lashes may rub against the cornea, cause abrasions and affect the normal defense mechanism the eye has against infection," says Dr. Leib.

"However, an outward turning of the lid may adversely expose the cornea to elements in the environment. As a result, erosions may occur in the protective coating surrounding the eye called the epithelium. This can cause the cornea to become dry and hasten the development of an ulcer."

Because the eyelids contain some of the glands that contribute to the tear film, when a person blinks, the tears help keep the cornea well lubricated. If the eyelid turns out of position, it can interfere with the distribution of tears and the flow of oxygen and nutrients to the cornea.

DISEASE OF THE BLOOD VESSELS CAN DAMAGE EYESIGHT

Temporal arteritis, a disease that inflames the blood vessels in various parts of the body, can result in a painless, sudden loss of vision or part of the visual field. This condition, which strikes between the ages of 50 and 70, must be treated immediately.

Symptoms usually include a headache around the temple area, a tenderness in the scalp and temples while combing the hair, pain in the jaw while chewing and weight loss.

"This disease may originate elsewhere in the body. Since blood vessels provide nutrition to all parts of the body, the eye also may be involved in this disease," says Dr. Leib. "Cortisone is used to treat temporal arteritis. Often the treatment may extend over the period of a year or two. In some cases, the patient is at risk even after blood tests suggest that the inflammation has subsided."

While the likelihood of developing these conditions increases with age, it's possible to maintain a lifetime of good vision, says Dr. Leib.

"It's important for elderly patients to take care of their eyes. Even if a person has no symptoms, he still should have a yearly ophthalmic examination. Many diseases of the eye are painless at their onset and only in the later stages of the disease do vision problems begin. In these cases, early detection can help spare the patient of any loss of vision in the future."

FOOTNOTES

FINANCE: **Raymond Arons,** Dr. P.H., Director of Case Mix Studies, discussed "DRG's — An Era of Change," at the Mid-Atlantic Health Conference in Atlantic City on May 23 before patient relations experts. Also in May, Dr. Arons presented a workshop during a program entitled "Diagnosis Related Groupings and the Elderly" at Daemen College in Amherst, N.Y.

SURGERY: **Dr. Peter S. Liebert,** assistant attending surgeon in the Division of Pediatric Surgery, has established the Medical Network for Missing Children. The network is designed to coordinate involvement of medical professionals in programs in the prevention of child abduction and molestation and in the identification of missing and exploited children.

OPHTHALMOLOGY: **Dr. Francis A. L'Esperance Jr.,** associate attending ophthalmologist, presented the Genkin's Memorial Lecture on "Laser Surgery: Current Applications," during the Annual Clinical Skills Day Seminar recently sponsored by the Montgomery Hospital and the Temple University School of Medicine in Philadelphia.

MEDICAL AFFAIRS: **Dr. Robert Lewy,** director of the Employee Health Service, presented a postgraduate course on "Infectious Disease Control in Hospital Employee Health" at the American Occupational Medical Association's annual meeting in Los Angeles recently.

PH ALUMNI ARE URGED TO COMPLETE QUESTIONNAIRES FOR NEW DIRECTORY

Questionnaires for the first PH Alumni Directory, scheduled for release in early 1985, are being mailed this summer. All alumni will receive a form with a request to complete and return the questionnaire to ensure that information in the new directory will be as complete and up-to-date as possible.

The directory is being compiled by the Harris Publishing Company for circulation among alumni only.

Upon receiving the completed questionnaires, Harris will verify the information. Alumni who have not responded to the questionnaire and who are not reached by telephone by the publisher will be listed in the directory with information that appears on alumni records.

The directory will feature alphabetical listings of each alumnus and will include class year, residence address and phone number, and business or professional information.■

IN MEMORIAM

DR. RITA GILLIS RUDEL

Dr. Rita Gillis Rudel, Ph.D., a leading neuropsychologist at The Presbyterian Hospital, died on May 21.

Dr. Rudel joined the Columbia-Presbyterian Medical Center in 1972 as an associate clinical professor in the Department of Neurology at the Columbia University College of Physicians & Surgeons. She was named clinical professor of psychology in the Department of Psychiatry in 1978.

She was noted for her research concerning brain function in children with learning disabilities. She devised several tests to evaluate language disorders in learning disabled children. Dr. Rudel also wrote extensively. At the time of her death, she was completing a text entitled "The Diagnosis of Developmental Learning Disabilities," which will be published posthumously.

She received a bachelor of science degree from City College of New York, an M.A. from the New School for Social Research and a Ph.D. from New York University.

She is survived by her husband, Julius, two daughters and a son.■

NINTH HATTIE ALEXANDER MEMORIAL LECTURE IS PRESENTED AT THE MEDICAL CENTER

Dr. Edwin Kilbourne, professor and chairman of the Department of Microbiology at Mount Sinai School of Medicine in New York, discussed "Influenza and the Uses of Serendipity" as guest speaker for the Ninth Hattie Alexander Memorial Lecture at PH. The lecture was sponsored by the Babies Hospital Alumni Association. From left, are: Dr. Rustin McIntosh, director of the Hospital's Pediatric Service from 1931 to 1960, Dr. Michael Katz, director of the Pediatric Service since 1977 and chairman of the Department of Pediatrics at Columbia University's College of Physicians & Surgeons, Dr. Kilbourne and Dr. Edward C. Curnen Jr., director of the Pediatric Service from 1960 to 1970.■

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STETHOSCOPE

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Special Issue 1984

The Presbyterian Hospital's
Modernization Program

Special Issue 1984
Volume XXXIX No 5

This special issue of Stethoscope is devoted to The Presbyterian Hospital's comprehensive modernization program.

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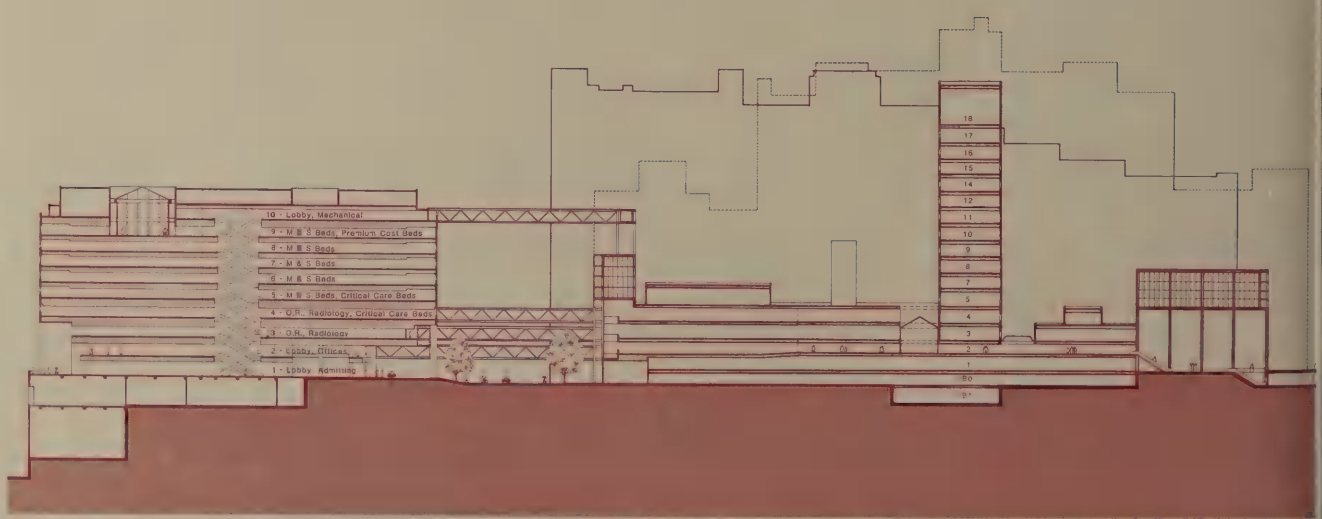


Cross section of the new hospital to be constructed on the main campus.

The Medical Center Rewrites Its Goals and Missions

In keeping with The Presbyterian Hospital's commitment to its patients and to the Washington Heights/Inwood community as specified by its Trustees, in December 1981 the Hospital asked the New York State Health Department and the Health Systems Agency of New York City for permission to restructure its facilities so that it could become a fully diversified provider of health care. The proposal to create a modernized and decentralized Medical Center resulted from a planning effort which was initiated in 1978.

The innovative Long Range Plan for Columbia-Presbyterian Medical Center is based upon the unique Goals and Missions Statement adopted by the Trustees of The Presbyterian Hospital and Columbia University.

The Statement reaffirms the fundamental importance of a "permanent alliance" between the Hospital and the University. The essence of that agreement of February 10, 1921 was a commitment: "(a) to secure the best obtainable treatment of the sick and injured and (b) to provide for medical education and research of the highest type..."

According to Howard L. Clark, Chairman of the Board of The Presbyterian Hospital and former Chairman and President of American Express, "The Trustees and the Medical Center's Long Range Planning Committee reaffirmed the principles contained in the permanent alliance agreement, and concluded that an inter-institutional planning process was essential to fulfill the missions both of The Presbyterian Hospital and Columbia-Presbyterian Medical Center."

These missions were defined as follows:

1. To be a center of excellence for the care of patients with complex and difficult medical problems who require the full resources of a modern, tertiary care medical center;

2. To provide a single standard of the highest quality care for the sick and injured in settings that assure comfort, compassion and dignity for all patients;

3. To conduct research in and advance the knowledge of the cause, prevention and treatment of disease and disability;

4. To educate students and professionals in Medicine, Dentistry, Nursing, Public Health and the Allied Health Services;

5. To develop programs for and to provide services to the Washington Heights/Inwood community (Community District 12) as part of its role in the community;

6. To be recognized in fulfilling the above-stated missions as an excellent clinical facility, a renowned educational institution and a center for research and knowledge.

In essence, The Presbyterian Hospital reaffirmed its intention to be a center of excellence for patient care, teaching, research and community services.

These programs were developed by the Hospital in conjunction with its staff, local elected officials and community organizations and residents, who participated in a series of open public meetings about the program, beginning in October and November of 1981. ■

A view of the centerpiece of the modernization program as envisioned from the western shore of the Hudson River. The new building will include 750 beds in a setting designed to enhance patient care and efficiency.

Redefining the Medical Center: A Program Overview

The Presbyterian Hospital at Columbia-Presbyterian Medical Center is planning a comprehensive, $496 million program to modernize its community and specialty referral services, and to curb the loss of health care resources available in northern Manhattan's Washington Heights/Inwood area.

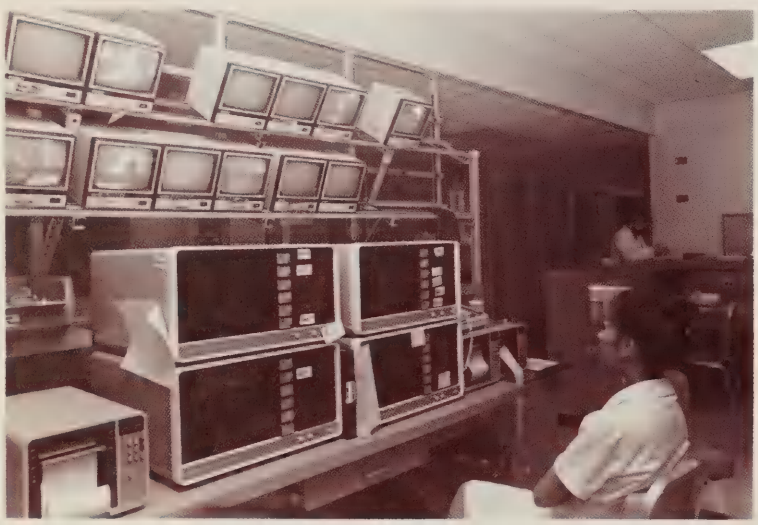
Dr. Felix E. Demartini, President of The Presbyterian Hospital, said, "In the past 15 years, five of the area's six hospitals have closed. A total of 1,136 beds have been lost from this community, and so many primary care physicians have left the neighborhood that today, less than 45 still practice here, including the ones at the Medical Center. As a result, the federal government had declared that most of the community served by the Hospital is a 'Health Manpower Shortage Area.' This trend simply cannot be allowed to continue."

The Hospital plans to consolidate and modernize its fragmented and aged high-technology facilities, and by doing so, upgrade the referral services relied upon each year by thousands of patients locally and throughout the world.

When it is modernized, Presbyterian will relinquish more than 100 of its 1,291 beds to help finance the construction of a new 300-bed community hospital. Presbyterian will continue to treat the area's high-risk patients, as well as to provide basic care for the surrounding neighborhood at the Medical Center. It also will provide the new community hospital with supplies and support services such as back-up, high-technology medical care; laundry and medicine. Thus, the community hospital will be able to devote all of its resources to administering high quality, basic care to a larger number of patients at the lowest possible cost.

Patients who do not need to be hospitalized, but who need skilled nursing care, will benefit from a proposed 80-bed long-term care facility planned to ease the backlog of patients awaiting nursing home placement.

Day care and home care programs will be developed for frail, chronically ill, and disabled patients who are capable of living at home with professional assistance. An Ambulatory Care Network Corporation will be developed to seed the area with new primary care practices. ■



Remote monitoring of patients will even further increase in the future both on and off campus.

Presbyterian Hospital Cares for New York and The World

As part of its multi-faceted modernization program, The Presbyterian Hospital in the City of New York is planning to consolidate and upgrade its fragmented and aged high-technology facilities at Columbia-Presbyterian Medical Center.

To upgrade the referral services relied upon each year by thousands of patients throughout the world, some of the Hospital's facilities will be extensively renovated, while others will be entirely replaced with newly constructed buildings. The centerpiece of the new construction is to be located just west of Fort Washington Avenue and will include approximately 750 beds. Beds will remain in the Harkness Pavilion and the Center for Women and Children, for a total of 1,185. Existing space also will be renovated for education, research, service and support functions, and all buildings will be connected by a system of tunnels and bridges extending all the way from Broadway to Riverside Drive.

Since Presbyterian's role as a provider of care to patients with complex disorders is to be strengthened, a higher proportion of its beds will be devoted to critical (intensive and coronary) care. In addition, the Hospital's high-technology diagnostic and patient care services will be consolidated and modernized. For example, its 10 radiology suites, 60 separate inpatient areas and five operating suites will be consolidated into larger, more efficient units. Since there is a shortage of inpatient rehabilitation and psychiatric services in the community, these will be expanded, as well.

In addition to enhanced patient care, energy conservation will be an important focus of the plan.

"Rather than waste our limited resources on high energy bills, built-in staffing inefficiencies and excessive maintenance costs, the Hospital could be spending more on improved health care for the community," said Eugene M. Devine, Vice President-Operations of The Presbyterian Hospital. "It's a worthwhile trade. In fact, we believe that operating cost savings over the 25-year lifespan of this program could offset the entire cost of renovation and new construction." ■

This view of the new Presbyterian Hospital as it will appear from the southeast corner of 165th Street and Riverside Drive.

The Hospital is a major community, national and international resource to patients from as close as West 168th Street as far away as India.

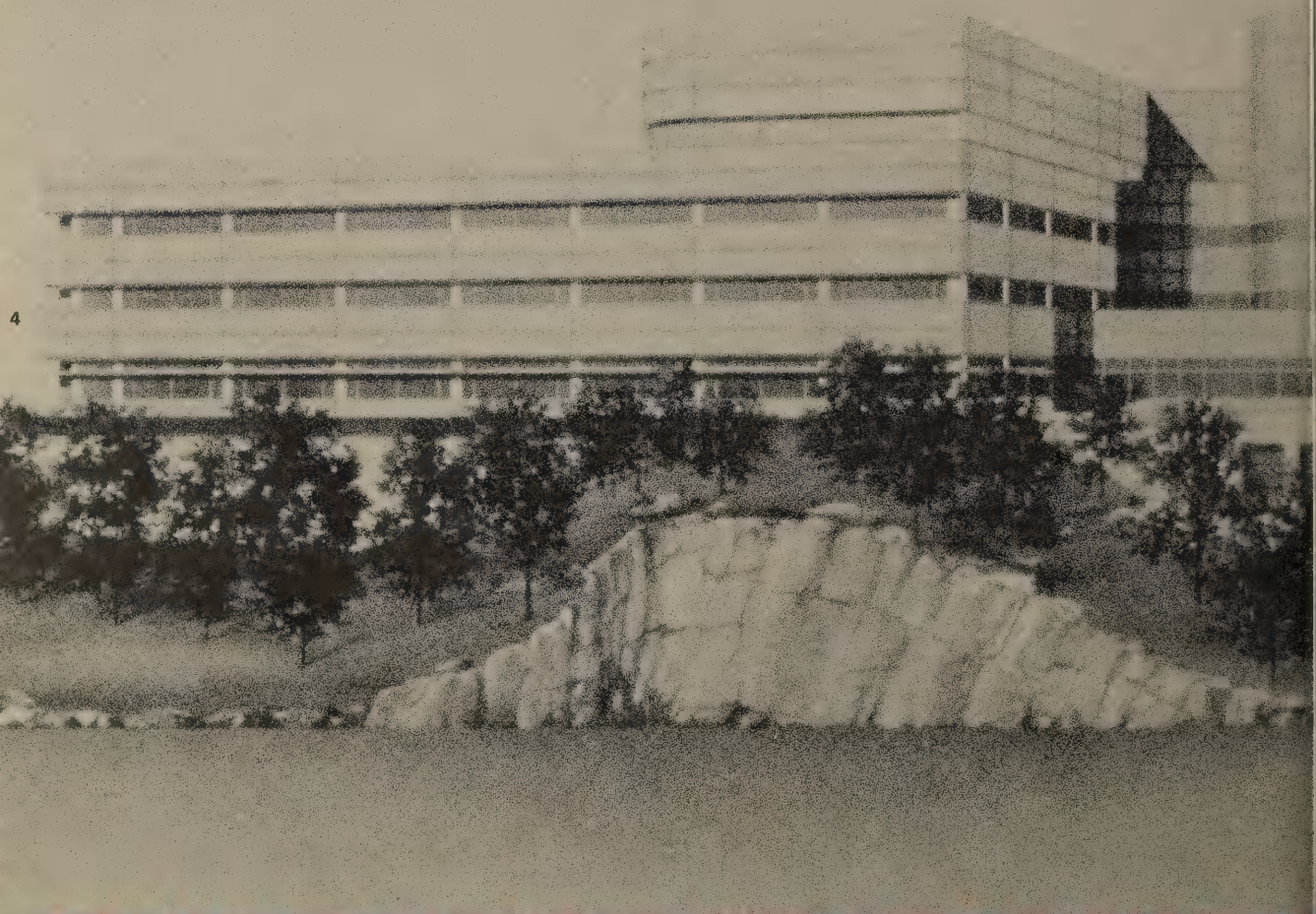
Hospital to Replace Facilities Closed in the Community

The Presbyterian Hospital at Columbia-Presbyterian Medical Center plans to build a new 300-bed, general care community hospital at the northern end of Manhattan, to replace the five hospital facilities closed in the surrounding community.

"We can't stand by and let the availability of health care in the Washington Heights/Inwood community continue its decline as it has in the past 15 years," said Dr. Felix E. Demartini, President of The Presbyterian Hospital. In a decade and a half, Jewish Memorial, St. Elizabeth's, Cabrini, Delafield and Wadsworth Hospitals have closed, and 1,13 beds have been stripped from the area. Today, only The Presb terian Hospital still serves the neighborhood. In addition, mos of the area's doctors have left or have retired, leaving less tha 45 primary care practitioners including those at Presbyterian.

Because the availability o health care in the neighborhood has declined so drastically, the federal government has declare most of it a "Health Manpower Shortage Area."

"On the average," declare a Hospital report submitted to th New York State Department of Health, "25 percent of the residents of Manhattan go to munic pal hospitals, with about 16 percent of the population receiving income support, including publi assistance, SSI and Medicaid.



The planned 300-bed general care community hospital will offer new vistas of care for area residents.

ne Washington Heights/Inwood ɔmmunity (District M-12) has ss than 10 percent of its care in unicipal hospitals, with about 3 percent of its population re-ɛiving income support." It is ear, says the report, that The resbyterian Hospital "has be-ɔme the municipal provider in istrict 12."

Thus, with Presbyterian roviding so much of the area's ealth care, the need to upgrade ıe routine medical services that 'e available here is becoming creasingly important.

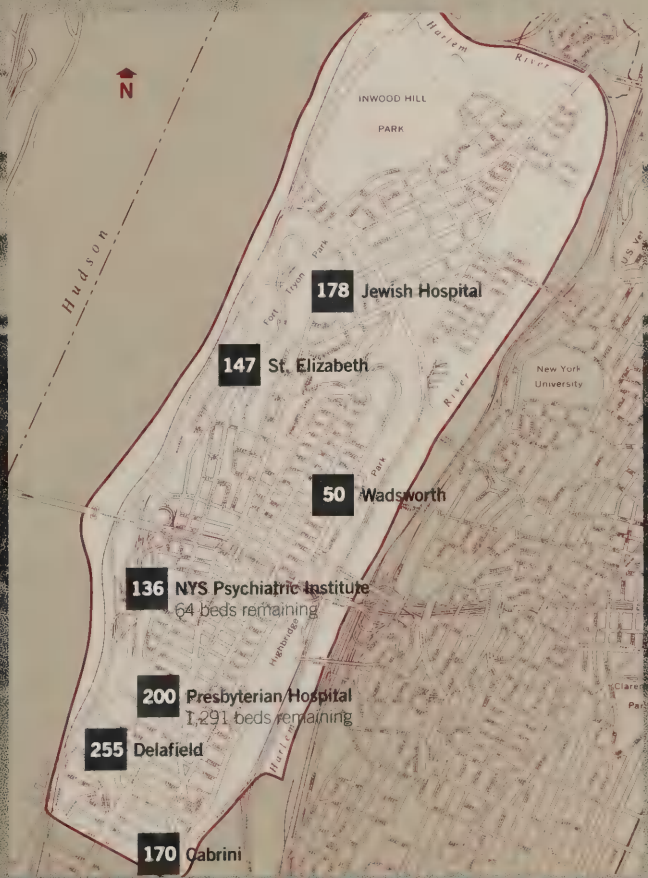
Under the plan, Presbyte-ɜn's 1,291 beds will be reduced 1,185. The 100-bed cut will ɛnerate savings to help pay for e new 300-bed community ɔspital. The smaller hospital will fer the same high-quality care available at the Medical Center, but it will not handle cases requiring sophisticated, high-technology services and equipment. Nearby, the 1,185-bed hospital will be available to all high-risk patients needing such care. And by tapping into Presbyterian's support services at the Medical Center for such things as laundry and medical supplies, the new facility will be able to provide its patients with all necessary services without having to duplicate them on a smaller, more expensive scale.

The savings could be substantial. In fact, were the plan in operation in 1981, it might have shaved $2.5 million from the area's health care bill in that year alone.

Overall, the modernization program will bring 1,000 construction, and 1,100 permanent jobs into the Washington Heights/Inwood area – a community where the median family income is significantly lower than the citywide average.

"We were very careful to fashion our modernization program to the needs of the people living in the area," said Dr. Thomas A. Blumenfeld, Vice President for Medical Affairs. The neighborhood has a birth rate 75 percent higher than the rest of Manhattan, and The Presbyterian Hospital can handle only about half of the community's 3,615 yearly births. Too often, patients must travel a distance to other maternity units. Since 24 of the new facility's beds will be set aside for obstetrical care, the new hospital will be able to accommodate 2,000 of these births a year. And 12 of the facility's beds will be set aside for intensive or coronary care. Its fully equipped emergency room will be able to handle 10,000 cases a year.

As Dr. Demartini observed, "More of our patients could be cared for in a community hospital, in a more appropriate, more cost-effective manner, and the quality of the health care that they receive would be just as good as it is at the Medical Center." ■



Community District 12
Total Beds Closed: 1,136

The Presbyterian Hospital is the only medical facility serving Washington Heights/Inwood. In the past 15 years, all five community hospitals have closed.

Residential Program to Feature Rehabilitation and Geriatric Psychiatry

The Presbyterian Hospital at Columbia-Presbyterian Medical Center is planning to create an 80-bed residential health care facility.

According to a report submitted by the Hospital to the New York State Department of Health, "Using the most conservative estimates, there remains a clear need for at least 1,500 additional residential health care facility beds in New York City. By 1989, when the project is slated for completion, this gap is expected to grow to approximately 4,500 beds.

"The Health Systems Agency of New York City," the report continued, "has designated the Washington Heights/Inwood community as an area of high need with regard to long-term care."

The elderly represent roughly 90 percent of the long-term care patients in New York City, noted David L. Ginsberg, Director of Planning for The Presbyterian Hospital. According to 1980 census data, the Washington Heights/Inwood community has a higher percentage of senior citizens (14.7 percent of its population) than either the borough of Manhattan (14.3 percent) or the city as a whole (13.5 percent).

Due to the chronic shortage of nursing home beds in the New York City area, The Presbyterian Hospital, at times, has been unable to place patients who do not need to be hospitalized. In 1981, the disabled and elderly spent 6,847 more patient days than necessary at Presbyterian while awaiting placement in nursing homes due to long waiting lists.

The planned $2 million facility is expected to save $24 million in reimbursement costs in the first year alone for patients such as these.

"Services including skilled nursing care, short-stay rehabilitative therapy and geriatric psychiatric care will be offered at the new facility," noted Ms. Martha Haber, Vice President for Nursing. "Currently there are no psychiatric inpatient facilities available to serve the northern half of the Washington Heights/Inwood area, and rehabilitation beds are in such short supply that some patients must be referred to facilities as far away as West Haverstraw, New York."

Ms. Haber added that day care and home care programs will be developed for frail, chronically ill and disabled patients who are capable of living at home with professional assistance. In addition, an Ambulatory Care Network Corporation will "seed" the area with doctors in private practices, who will be assisted with support services such as secretarial help and computerized medical records. ■

A home health aide escorts a patient to her clinic appointment at Pet.

Mindful of the "greying" of Washington Heights/Inwood, the Hospital will inaugurate a nursing home, specializing in geriatric psychiatry and rehabilitation medicine.

Presbyterian Hospital Plans to Make House Calls

As part of its comprehensive modernization program, The Presbyterian Hospital at Columbia-Presbyterian Medical Center is planning to establish a Home Health Agency which will provide health care services for those elderly, chronically ill and disabled patients in Washington Heights/Inwood who can live at home, but only with professional support.

Through the proposed Home Health Agency, the Hospital plans to provide services such as nursing and physician care, occupational therapy, physical therapy, speech therapy, personal care and assistance with housekeeping and home making.

The only other home health agency in the area was affiliated with St. Elizabeth's Hospital, which was closed in 1981.

"There's no reason why these patients should be brought back and forth to the Hospital or live in a nursing home, when we can provide many health care services right in their own homes, and at lower cost," said Dr. Felix E. Demartini, President of The Presbyterian Hospital.

The program is expected to require $100,000 in capital expenditures at the start. But, said Joseph P. Corcoran, Vice President for Finance, "By keeping appropriate patients out of nursing homes or the Hospital, we estimate that the savings to society from this one program alone could total $2.6 million each year, and we can provide these patients with more appropriate, more convenient health care." ■

This elderly woman can remain at home thanks to the services of a visiting aide.

Modernization and Replacement Can Improve Care and Enhance Efficiency

A landmark study, prepared by The Presbyterian Hospital at Columbia-Presbyterian Medical Center, indicates that modernization and replacement of an older hospital's aged and inefficient physical plant can be one of the most effective ways of enhancing its programs and improving the quality of the care that it provides.

The report is an in-depth analysis of the projected economic impact of modernizing and replacing this 55-year-old teaching hospital. It revealed that it would cost about $62.2 million a year for 25 years to consolidate and modernize the Hospital's fragmented facilities. However, operating cost savings, on the average, would be virtually equal to the cost of the modernization. With these improvements, the Hospital could provide higher quality care, offer a better, more productive working environment for the staff, and present a wider variety of services.

"Rather than waste limited resources on high energy bills, built-in staffing inefficiencies and excessive maintenance costs, older hospitals could be spending more on health care for the communities that they serve," said Joseph P. Corcoran, Vice President for Finance at The Presbyterian Hospital. "It's something of a trade. We've demonstrated that the initial investment will pay for itself in operating cost savings over 25 years. Piecemeal efforts to contain costs could never generate the results that a thorough, carefully planned modernization program is capable of producing."

For example, despite Presbyterian's efforts to conserve energy (which already have cut fuel costs by more than $1 million), its old and poorly insulated buildings still waste millions of dollars a year. Heat easily seeps into and out of the Hospital's numerous high-rise pavilions. A planned, well-insulated, "low rise" design for new buildings, and renovation of useful older buildings will dramatically reduce the Hospital's fuel costs. New space will cost as much as 40 percent less to heat and cool than the old space it replaces.

State-of-the-art energy management systems would be integrated into all new and renovated spaces. Energy expenses would be trimmed further through the use of solar collectors, and innovative energy conservation measures, including a glass-enclosed concourse connecting – and

This glass-enclosed walkway on Broadway offers an elegant way to save money by reducing energy losses.

The use of technology will be expanded throughout the Hospital to lower costs and further improve patient care.

insulating – some of the existing buildings. Energy savings could amount to roughly half of the projected reduction in operating expenses – about $31 million a year.

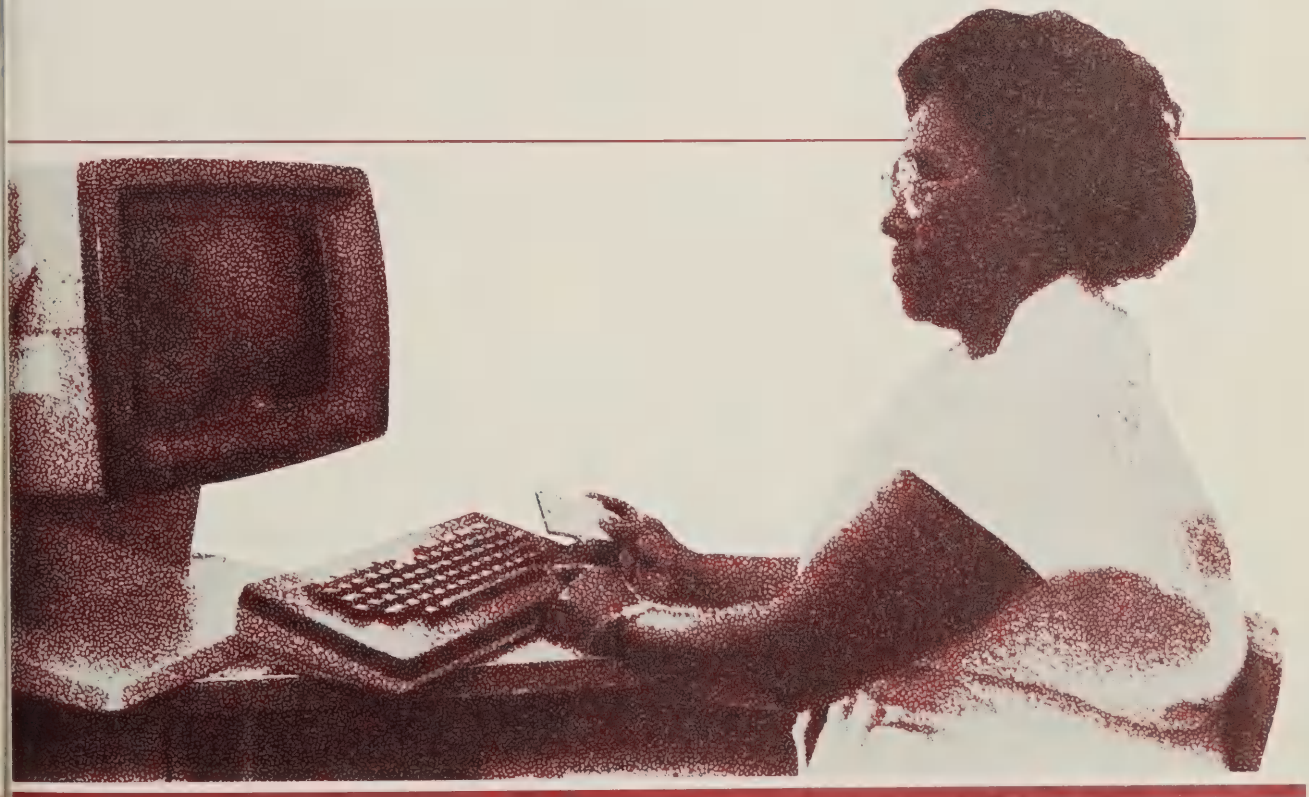
"These funds could be used to enhance the quality and availability of the care that we now provide," said Dr. Felix E. Demartini, President of The Presbyterian Hospital. "Right now this money is, quite literally, slipping between the cracks of our buildings."

Duplication and fragmentation of services, and the high cost of maintaining the hospital's aged facilities and equipment also contribute to higher costs. For example, staffing and outfitting radiology suites with modern equipment can be quite expensive. If the Hospital does not consolidate its facilities as it modernizes them, it will be forced to upgrade 10 separate suites. The same is true of its five operating suites, and many of its support services. If the Hospital is modernized and services are consolidated, maintenance could be cut by an additional $10.6 million a year.

But nowhere is fragmentation and duplication of services more evident than in the existing design of the Hospital's basic inpatient care units. There are more than 60 of them dispersed throughout The Presbyterian Hospital. On a typical floor in a typical building, there are totally isolated "wings," each containing just 22 beds. These small, separate units are extremely difficult to staff and supply. A more efficient scheme under development would bring four 36-bed units together around a single service core. This arrangement would enable the Hospital to provide enhanced patient care with fewer costly support services, such as pantries, or storage and reception areas. Eliminating staffing inefficiencies could save Presbyterian $20.5 million annually.

"This study clearly indicates that older, established hospitals – particularly those that are located in states with long-standing cost containment programs – may have to restructure their operations totally in order to achieve truly significant, long-term, cost containment goals," said David L. Ginsberg, the Hospital's Director of Planning. "We believe that investing in such an undertaking today can pay society back handsomely."

This "value engineering" report was originally issued as part of the Hospital's "Certificate of Need" application for its modernization program. ■



Computers at nursing stations will provide instant patient information.

Ambulatory Care Network To Seed Area with Physicians

The Washington Heights/Inwood Ambulatory Care Network Corporation (ACNC) is a program designed to increase the availability of primary care in Washington Heights/Inwood by "seeding" the area with physicians in private group practices.

In keeping with the innovative Goals & Missions Statement and Long-Range Plan for Columbia-Presbyterian Medical Center which was endorsed by the Trustees of the Hospital and Columbia University, the ACNC was designed to make routine ambulatory care as

accessible as possible to area residents, according to Eugene M. Devine, chairman of the ACNC and Vice President-Operations at The Presbyterian Hospital.

The proposal for this corporation was developed and submitted to the State of New York by a coalition of community leaders including representatives of the Hospital, local elected officials and Community Board-12. Major participants have included State Senator Franz Leichter; Congressmen Ted Weiss and Charles Rangel; State Assemblymen Herman (Denny) Farrell and Brian Murtaugh; Councilman Stanley Michels; Igal Jellinek, co-chairman of the Washington Heights-Inwood Council on the Aging; Msgr. Thomas Leonard, of Community Board-12; Edith Prentiss of The Presbyterian Hospital Community Health Council; Walter Greenberg of CB-12; and Dr. Thomas Q. Morris of Columbia University and President-elect of The Presbyterian Hospital. Mr. Jellinek, Dr. Morris and Ms. Prentiss also are members of the board of the ACNC.

Much of the Washington Heights/Inwood community is a federally designated "Health Manpower Shortage Area." In the past 15 years, five of this area's six hospitals have closed, and the number of general practitioners has declined steadily. Today there are fewer than 45 primary care physicians – including those practicing at The Presbyterian Hospital – for a community of more than 180,000 people.

As doctors continue to retire or move away, more and more patients will be forced to turn to the already heavily utilized clinics and emergency rooms at the only remaining hospital in Washington Heights/Inwood, The Presbyterian Hospital.

To reverse this trend, and to move health care services from large institutions to more convenient community settings, the ACNC will employ an incentives program to encourage physicians to settle in the area and establish permanent private practices. Incentives will include subsidized office space, secretarial support and a computerized medical records system under development through a grant from the John A. Hartford Jr. Foundation, which will link these new community practices electronically with the emergency rooms, clinics and group practices at The Presbyterian Hospital.

The ACNC plan – initially a three-year demonstration project – calls for the establishment of practices for 50 physicians in the Washington Heights/Inwood area over a period of 10 years. This number, it has been calculated, would be sufficient to meet the area's present and future primary care needs.

"In a sense," said The Presbyterian Hospital's President, Dr. Felix E. Demartini, "we're turning the clock back to a simpler time when you could walk a few blocks for medical care if you needed a doctor. But these new ACNC doctors will be graduates of leading residency programs, and the entire network will be linked to the Medical Center to help establish a uniformly high level of patient care."

In addition to assuming responsibility for "homesteading" new doctors in the area, the Corporation also would handle billing for all ambulatory care provided by physicians in the new practices and at The Presbyterian Hospital. ■

The growing population of elderly residents in the Washington Heights/Inwood community is among the 180,000 people now served by less than 45 physicians.

Families with young children are the other major group to be served by the Hospital's expanded community health network.

Care Networks Bring Medical Advances to Thousands of Patients

One approach to containing health care costs while improving access to high-technology care is regionalization, a method whereby costly, high-technology services are centralized to avoid duplication.

The Presbyterian Hospital is well known for its efforts to regionalize the care of high-risk pregnant women and infants. The Regional Tertiary Perinatal Network, for example, is one component of the Hospital's Center for Women and Children. The network is a formal affiliation linking The Presbyterian Hospital with a dozen hospitals in the tri-state area, ranging from Harlem and Greenwich Village to Bergen and Rockland Counties, and Stamford, Connecticut.

Hundreds of high-risk, premature infants are transported to the Hospital in mobile care intensive units and by helicopter each year to take advantage of the specialists and equipment available in Presbyterian's world-renowned neonatal intensive care unit.

Increasingly, pregnant women are transported to the Hospital's center for high-risk maternity patients so that they can take advantage of the Hospital's excellent obstetric programs, and so their babies do not have to be sustained artificially while they are transported here.

Another important aspect of formal referral networks is the fact that Medical Center personnel will provide consultations, and will travel to affiliated community hospitals to help improve the quality of care in the entire region.

In addition to the formal referral networks, the Hospital supports other specialty centers and informal referral programs. A recent analysis of the Hospital's referral patterns indicates that many of its subspecialty programs routinely draw patients from hundreds of miles away. ■

This high-risk premature infant is monitored closely in the Neonatal Intensive Care Unit.

An ambulance carrying a high-risk premature infant races toward the Medical Center.

Columbia-Presbyterian Medical Center's history of preeminent research, teaching, and patient care has been made possible by an enduring tradition of strong private support. The Hospital welcomes gifts in the form of cash, securities, property, or other gifts-in-kind for general purposes or for specific programs of interest to you.

Our staff is prepared to assist you in planning gifts that provide substantial financial benefits both to you and the Hospital. Current tax laws offer opportunities for friends of the Hospital to make larger contributions than they thought possible—and to receive substantial charitable tax deductions, income for life, and other significant financial benefits.

Further information on outright gifts, bequests, and other donations to The Presbyterian Hospital is available. Please contact:

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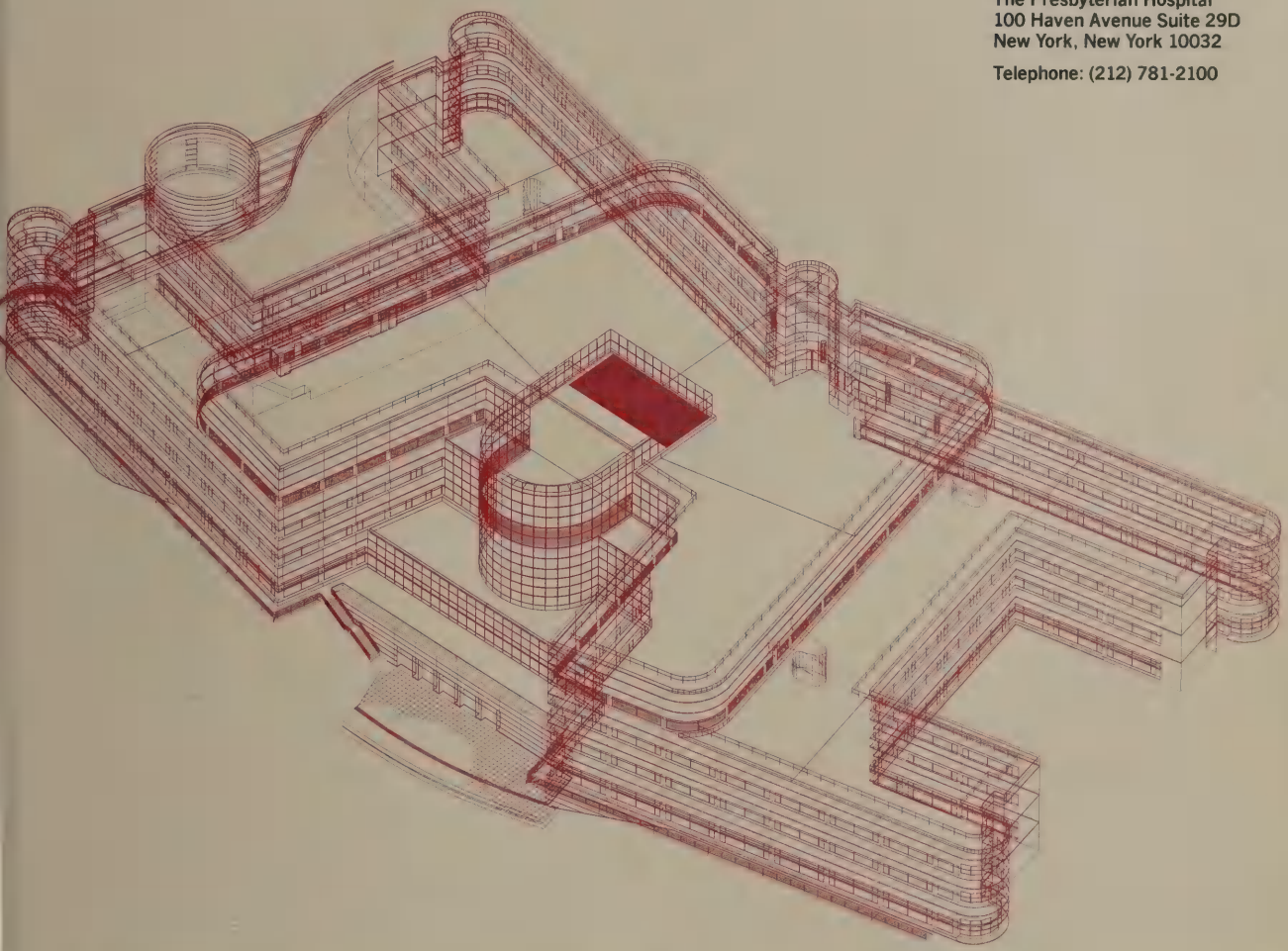

The low-rise division of the new 300-bed community hospital is depicted in this computer drawing.

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IMPORTANT NOTICE TO OUR READERS

You are invited to participate in The Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity, unitrust life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information, call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

ABOUT THE COVER

J. P. Lovette displays his new strength three weeks after making history as one of the world's youngest heart transplant recipients. The mask he is wearing protects him from infection while he is in the hospital. Photo by Joel Landau.

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J.P. LOVETTE: 4-YEAR-OLD RECEIVES A NEW HEART AND MAKES HISTORY

Joel Landau

Pat and Jim Lovette gather around their 4-year-old son J.P. as he prepares to leave the Hospital following heart transplant surgery.

At age 4, J.P. Lovette never knew what it meant to feel good. Now, for the first time in his life, the tot, who is one of the world's youngest heart transplant recipients, will be able to go camping in the mountains with his family.

Just a few months ago, doctors estimated he had weeks, possibly a month, to live. His failing heart couldn't pump enough blood to his body and, eventually, it would stop working. Because J.P.'s heart was so diseased, routine surgery could not correct the problem. "A transplant was the only answer," say his parents, Pat and Jim Lovette. "There was a risk — but it was one chance or no chance."

For the Lovettes, an average young American family with goals and dreams, J.P.'s condition has generated what seemed like endless stress, strain and pain. "Jim and I have felt that we've walked the edge for so long," says Mrs. Lovette.

"For a long time, we couldn't even get a babysitter if we wanted to go out. The sitters knew he had a heart condition and were reluctant to sit for him. They'd always ask us 'what if something happened to him?' "

The Lovettes brought J.P. to The Presbyterian Hospital on May 14 in hope of a solution. The youngster received his new heart on June 9.

A week later, cardiac surgeon Dr. Fred Bowman, who assisted Dr. Eric Rose, director of Cardiac Transplantation, in J.P.'s transplant surgery, marveled at the progress of his feisty patient: "He almost ran me down with his tricycle while I was making rounds. I heard someone yell 'lookout!' and there was J.P., barreling down the corridor of the Open Heart Recovery Room." Less than three weeks after the surgery, J.P. was discharged from the Hospital.

Dr. Bowman had performed open heart surgery on J.P. at Presbyterian when the boy was 6 months old to correct one of four defects in his heart and to buy him some time until a permanent solution, such as a heart transplant, became feasible.

EARLY SURGERY HELPED TO BALANCE J.P.'S CIRCULATION

"The early surgery allowed his circulation to be balanced in such a way that he managed quite nicely," says Dr. Welton Gersony, director of Pediatric Cardiology at the Babies Hospital division of PH. "His heart was abnormal, but it still pumped blood through his body. Unfortunately, after a bout with a viral infection in February, J.P.'s condition rapidly deteriorated. His heart muscle was failing. When he returned here in

continued on next page

May, he was in a terminal state."

The PH Cardiac Transplant Service had been considering its first transplant in a child, and J.P. met the requirements.

"Despite his heart defects, he had good arteries leading to his body and lungs, which could be used to attach the new heart. His lungs were healthy. Also, there appeared to be a willingness in the Lovette family to be pioneers," says Dr. Gersony.

"They had the will and the courage to endure everything surrounding a transplant. The parents are important — it was their motivation and determination that brought him back."

THE LOVETTES HAD A FIRM BELIEF THAT THEIR CHILD WOULD LIVE

As the Lovettes sought a cure for J.P., they harbored a firm belief that their child would be saved. "My faith in God was important. Jim and I were willing to make a lot of sacrifices. All the time, I asked myself if the family structure could stand it," says Mrs. Lovette.

"I don't know what the impact of J.P.'s illness has been on his 6-year-old sister Gail and his 2-year-old brother Michael. For the last few years, I had to screen all of Gail's playmates for colds because J.P. was so susceptible to infection — if a child had a cold, he couldn't come in to play. It was a difficult situation because we had to isolate ourselves as a family."

SUCCESS OF ANTI-REJECTION DRUG MADE TRANSPLANT POSSIBLE

If special drugs were not available, J.P.'s body would not have accepted his new heart. The success in adults of the anti-rejection drug cyclosporine, which suppresses part of the body's immune system, convinced doctors that a heart transplant could be performed successfully in a child.

"We no longer consider heart transplants experimental. It's now the accepted treatment for certain adults with end-stage heart disease," says Dr. Rose. "Applying the successes we've had with adult heart transplants to children was the next logical step."

Before the discovery of cyclosporine, heart transplant patients required large doses of corticosteroids to fight off rejection. In children, corticosteroids in large doses would hamper growth. In order to prevent rejection of his new heart, J.P. must take cyclosporine and small doses of corticosteroids daily.

J.P. IS JUST BEGINNING TO UNDERSTAND THE TRANSPLANT

J.P. visits the Hospital once a month for a heart biopsy tugging a sack full of stuffed animals. His father says the youngster is just beginning to understand the transplant. "Before, when anyone asked him how he felt, he'd quietly say 'Fine,' now he's emphatic when he says 'Good.' He now knows what feeling good means."

Since May, his parents have lived 2,000 miles apart. Mr. Lovette, a mechanical engineer for General Electric, is at home in Denver. His wife, J.P. and their two other children have been living in the New York area in order to be close to the Hospital for J.P.'s follow-up visits to PH.

The family expects to be reunited in Denver early in 1985. "I crave normalcy. I want to enjoy the mundane things in life. Now the focus has to get off J.P. and onto the family as a unit," says Mrs. Lovette.

Even after he returns home, J.P. will need to return to New York for a heart biopsy once a month for the next year. After that, he will need a biopsy every other month for the rest of his life.

J.P.'S SPIRIT OF INDEPENDENCE HELPED SPUR HIS RECOVERY

Pat and Jim Lovette feel that J.P.'s rapid recovery is due to their early insistence that their son not become what they call a "cardiac cripple," or a child with a heart condition who is overly protected by his parents. "J.P.'s spirit of independence and good attitude also had a lot to do with his recovery," explains Mrs. Lovette.

"We've always called him the little child who could, and encouraged him to maximize his capabilities. He has a good attitude about doctors and hospitals because we always told him the truth about what to expect, what would hurt and what wouldn't."

This child who once sat on the fringe as an observer now can run and play tag, go around the block on his tricycle, help his mom set the table and clean up his toys.

Now that the surgical part of the transplant is history, another question remains. "As J.P.'s heart grows with him, we're not sure how his body will react to it," says Dr. Gersony.

THE LOVETTES ARE LEADERS INTO THE UNKNOWN

Regardless of the hurdles the Lovettes have cleared, more remain. "J.P. will always be the child with the heart transplant and that will almost be a crusade for the family," says Dr. Gersony. "The Lovettes are leaders into the unknown." ■

THE VALUE OF A HEART TRANSPLANT IS PRICELESS

When a heart transplant is the only way to save a life, it doesn't matter whether the person is rich or poor, it's simply a question of a life to be saved, says Pat Lovette, the mother of 4-year-old heart recipient J.P. Lovette.

In fact, according to studies at The Presbyterian Hospital, the cost of a heart transplant is considerably less than the cost of dying of terminal heart disease, which can involve months of hospitalization in an intensive care unit, as opposed to three weeks or less in a hospital followed by a complete recovery. Yet, some insurance companies still do not cover heart transplantation.

"The success rate for heart transplants, which is now more than 80 percent, is much higher than the rate for many common surgical procedures which insurance companies have covered all along," says Dr. Eric Rose, director of Cardiac Transplantation at PH.

Only recently have insurance companies begun to cover the cost of the anti-rejection drug cyclosporine. A transplant patient who must take cyclosporine for the rest of his life faces an annual bill of $6,000 for that drug alone.

As J.P.'s father Jim Lovette puts it: "The expenses don't end after the surgery and hospital stay are over. In the long run, the costs probably will increase as J.P. gets older."

For this reason, the Lovettes and the families of other transplant patients have established special funds to which contributions can be made to help cover such things as non-reimbursable medical, travel and living expenses. ■

SPECIAL TECHNIQUES HELP KEEP PHYSICIANS IN TOUCH WITH THE HEART

Dr. Ehud Krongrad reviews a young patient's electrocardiogram.

When the young couple took their newborn infant home, the child appeared to be lively and healthy. Two months later, the baby wasn't eating well, his pink skin had turned pale and he had difficulty breathing.

"The parents were stunned to learn that their infant had an abnormal heart beat," says Dr. Allan Hordof, a pediatric cardiologist at The Presbyterian Hospital.

A serious abnormal congenital heart beat may be seen within the first few months of life. In some patients, this problem may not show up until the child is a toddler.

"In this case, the parents brought the child to their pediatrician for an examination and he referred them to a pediatric cardiologist here. After performing an electrocardiogram and other tests, it was found that the baby suffered from supraventricular tachycardia, or a very fast abnormal heart rhythm," says Dr. Hordof.

"The tiny heart was pumping at the rate of 250 to 300 beats a minute. Normally, an infant's heart beats at 120 to 140 times per minute. Because the heart was working so fast, there wasn't enough time for it to fill with blood. When this condition occurs, the child can develop heart failure within 24 to 48 hours."

In most instances, an ECG is enough to help diagnose the problem and drug therapy is sufficient to restore the normal heart beat. In rare cases, special electrical studies of the heart are required to find the exact location of the abnormal electrical circuit in the heart and to interrupt the irregular beat by introducing a mild electrical current through the heart. Normal rhythm can be restored to the heart and doctors can maintain a stable heart beat with drugs.

MAINTAINING THE HEART'S ELECTRICAL CIRCUITRY

In the normal heart, an electrical impulse originates from within the upper chambers of this hollow pumping organ. The impulse then activates the heart's lower chambers to contract. After the contraction, the heart rests as it waits for the next impulse, or beat. In an adult, the heart beats from 80 to 100 times a minute. In a newborn infant, this process is repeated from 120 to 140 times a minute.

If the heart's own pacemaker skips a beat occasionally, or causes the heart to beat too quickly or too slowly, the abnormal electrical pattern can short-circuit the system in some patients.

Irregular heart beats may occur spontaneously, may result from an infection that can injure the heart's electrical system, or may exist as a result of open heart surgery.

Many people have an occasional irregular heart beat, but when the irregularity persists, it may point to an abnormal condition in the heart. By diagnosing a problem early, doctors can recommend corrective treatment before the condition becomes life-threatening.

At PH, pediatric cardiologists look for

continued on next page

Robin Levy shows her son Morgan, 2, how to hold a special device for recording an irregular heart beat.

early signs of heart abnormalities in their young patients by using an array of tests, including routine electrocardiograms, 24-hour ambulatory ECGs, exercise testing, echocardiography and cardiac catheterization.

ECG CHECKS ELECTRICAL ACTIVITY OF THE HEART

For the past 70 years, the electrocardiogram has been a basic tool in evaluating patients with abnormal heart rhythms and heart disease.

An ECG records the heart's electrical activity over a period of 12 to 15 seconds. "By looking at the heart from different angles through multiple leads attached to the patient's chest, an ECG can show normal and abnormal heart rhythm, an abnormal enlargement of a heart chamber and damage from a heart attack," explains Dr. Ehud Krongrad, associate attending pediatrician and director of the Pediatric Heart Station.

Although an ECG can aid in diagnosing an irregular heart rhythm, this method has limitations, says Dr. Hordof. "Many abnormal heart rhythms are elusive and occur only a small percentage of the time and cannot be picked up by a 12-second ECG tracing."

PORTABLE MONITOR RECORDS ELUSIVE IRREGULAR HEART BEATS

A patient who reports an occasional rhythm disturbance may be sent home with a portable monitoring device that records his heart activity over a 24-hour period. The patient also keeps a diary of his activity and any symptoms of weakness, palpitations and dizziness. Doctors then correlate the symptoms to any recorded heart beat irregularities.

If doctors suspect that the irregular heart beat occurs just a few times a week or month, a youngster may be sent home with a slightly different device called an event recorder. This device, about the size of a pocket radio, has four sensors, or leads, which are placed against the child's chest.

"When a child senses a problem coming on, he or his parents record the episode. The 30-second ECG then can be transmitted over the telephone to a recorder at Presbyterian," says Dr. Krongrad.

"When we recognize an arrhythmia — an irregular heart beat — we usually can treat it with medicine. Surgery rarely is required," says Dr. Krongrad.

Drugs can interrupt the heart's abnormal electrical circuit to restore a normal rhythm. They work by altering the electrical properties of normal and abnormal tissue in the heart. When drugs are ineffective and surgery is necessary, doctors make a map of the heart, locate the faulty electrical area and surgically remove it, thus removing the source of the arrhythmia.

EXERCISE TESTING CAN HELP DETECT IRREGULARITIES IN HEART RHYTHM

Exercise testing is another method to detect any dangerous heart rhythm irregularities. If a condition is potentially dangerous, doctors can prescribe how much exercise is safe for a child.

In the Hospital's Cardiopulmonary Exercise Laboratory, a child walks on a treadmill with ECG leads attached to his chest. "By using the treadmill, we can determine if these irregular heart beats are brought on and worsened by exercise. It is not unusual for the irregular heart beat to disappear during exercise, which indicates that the abnormal heart beat is not likely to be life-threatening," says Dr. Hordof.

TEST RESULTS HELP DETERMINE WHEN SURGERY SHOULD BE PERFORMED

"We can tell quite a lot about how the heart and lungs work during exercise. A low cardiac output usually points to a heart problem," says Dr. Anthony Mansell, co-director of the lab.

"The test is much like running a car to check it out thoroughly instead of inspecting it visually. Most potential problems will show up when the car is in motion.

"In children who haven't had heart surgery, but who need it, the test results help us to determine the best time for them to undergo surgery. In those who've already had surgery, we can measure their improved tolerance for exercise," he adds.

"These evaluations, both before and after surgery, help us to devise an exercise program geared to a particular child's ability, depending on his specific cardiac abnormality," explains Dr. Hordof.

SOUND WAVES PRODUCE A PICTURE OF THE HEART

Evaluation of heart defects also can be accomplished by using echocardiography, which uses sound waves to construct an image of the heart's four chambers on a screen and to examine

the flow of blood through blood vessels.

For instance, if an infant with blue coloring is brought in, doctors use echocardiography to view the heart. "Immediately, we can determine whether the problem is in the heart or in the lungs. With infants, this can mean the difference between life and death," says Dr. Fredrick Z. Bierman, a pediatric cardiologist. "Echocardiography also can be used to examine heart function in the fetus prior to childbirth to identify potential high-risk patients."

In echocardiography, sound waves with a frequency above the human range of hearing are aimed at and bounced off the heart. The device times how long it takes the sound waves to return to the transmitter, then charts the distance and reconstructs a picture of the heart.

ECHOCARDIOGRAPHY GIVES A MAGNIFICENT PICTURE OF THE HEART

"This technique gives us a magnificent picture of the heart," says Dr. Bierman. "Echocardiography also can be combined with the Doppler, another method for diagnosing many problems. The Doppler is a device which we place against the chest to examine the flow of blood in the heart's main artery and the pulmonary artery, which leads to the lungs."

Pediatric cardiologists also use echocardiography to guide needles that remove fluid from the space around the heart and lungs. "This is an alternative to fluoroscopy, X-ray signals that produce a picture of the patient's organs," says Dr. Bierman.

Echocardiography can help to evaluate such conditions as holes between the chambers of the heart and abnormal connections of blood vessels.

CARDIAC CATHETERIZATION: CLASSIC METHOD OF DIAGNOSIS

In adults, the severity of heart disease often is evaluated by using cardiac catheterization, in which a catheter (a long, thin tube) is introduced into the heart through a small incision made in the femoral artery in the groin.

Because the catheters used in adult veins were too wide for the tiny blood vessels of young children, pediatric cardiologists had to develop catheters as narrow as a strand of spaghetti.

Although many patients require catheterization for diagnoses, echocardiography is increasingly being used in children because it is less stressful, says Dr. Bierman.

Cardiac catheterization, which was developed in the 1920s, enables doctors to study the heart. Once the catheter is in place, a special dye is injected and doctors can see a moving picture of the heart on a monitor screen.

Catheterization also is used to take small tissue samples of the heart to test for signs of inflammation or rejection in the case of heart transplants. A new development in catheterization is the use of catheters with small balloons on their tips which doctors inflate to open blocked valves in the heart and to repair some heart defects. (See story on page 9.)

RHYTHM DISTURBANCES IN THE HEART REQUIRE SPECIAL TESTS

In some patients, special catheters are placed in the heart to measure electrical activity within the heart muscle. These tests, called electrophysiological studies, also can stimulate the heart at different rates.

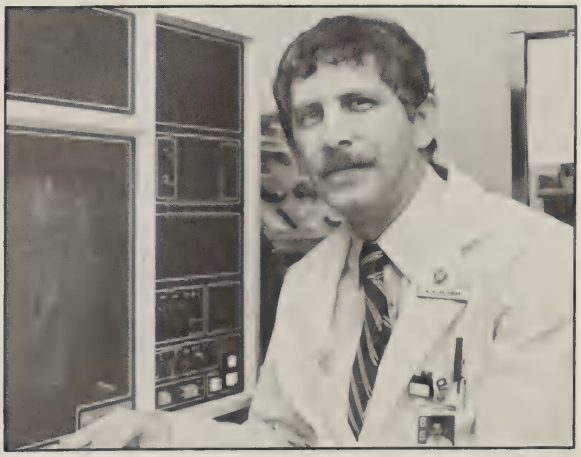
"Potentially lethal rhythm disturbances can be hard to document in some patients. If an arrhythmia (abnormal heart beat) is suspected, we safely can induce an irregular heart beat electrically and keep a close watch on the patient," says Dr. Hordof.

"If we find that the irregular heart beat we induced is the source of the problem, it enables us to find out why it's happening, to locate the origin of the arrhythmia and to begin the proper therapy."

Electrophysiological studies also allow doctors to evaluate the effectiveness of different drugs to stabilize these irregular heart beats.

"If a youngster doesn't respond to other therapies, an electrophysiology expert can locate the origin of the short-circuiting in the heart. Then, the defect causing the problem can be surgically eliminated," says Dr. Hordof.

Ten years ago, many children lived with potentially lethal heart defects because doctors did not have the tools with which to detect these conditions. Today, doctors can not only detect them, but can do so by inflicting a minimum of pain and discomfort while increasing the quality and length of life.



Dr. Fredrick Z. Bierman, at left, inspects an ultrasound image of the heart. At right, Dr. Allan Hordof prepares to review a 24-hour ECG.

PEDIATRIC HEART SURGERY: MOST DEFECTS NOW CAN BE CORRECTED

When 7-year-old Max Robbin used to play tag with his friends, he didn't like to be "it" because he tired easily from running too much.

"It was too much to keep it all inside, so I had to tell my friends about the surgery and they never made fun of me," says the second grader.

When Max was born, he had a malformed valve in his heart which caused the blood that goes to the lungs to get there through the wrong pathway. As a result, his skin turned blue, he had problems breathing and he tired easily.

EARLY SURGERY TEMPORARILY CORRECTED THE DEFECT

Doctors performed surgery twice before Max was 2 years old to temporarily correct a combination of heart defects that prevented his blood from receiving enough oxygen.

These operations bought Max time until he was 6. Doctors at The Presbyterian Hospital then were able to create an extra tunnel through which blood could pass from the upper chambers of his heart to the artery going to his lungs. Max also had a pacemaker implanted to assure a steady heart beat. A problem with his pacemaker required the installation of a new one a few months later.

As Max has grown older, he has tried to keep up with physical activities popular with children his age. For him, this includes horseback riding lessons. He also enjoys pottery making and computer studies.

Early this school year, he was elected vice president of his second grade homeroom at P.S. 11 in New York's Chelsea neighborhood.

POSITIVE SELF-IMAGE HELPS IN MAX'S RECOVERY

For Max's parents, Tony Robbin and Rena Kosersky, the last seven years have been difficult. "When Max was born, we never expected to have a sick child. Now, his heart is not normal like the hearts of other children, but it's an effective heart," says Mr. Robbin.

Ms. Kosersky says, "It's wonderful to see Max run down the street. Last winter, I had to carry him to his bus stop for school. Now, he dashes down the street for the bus with a playmate from the neighborhood."

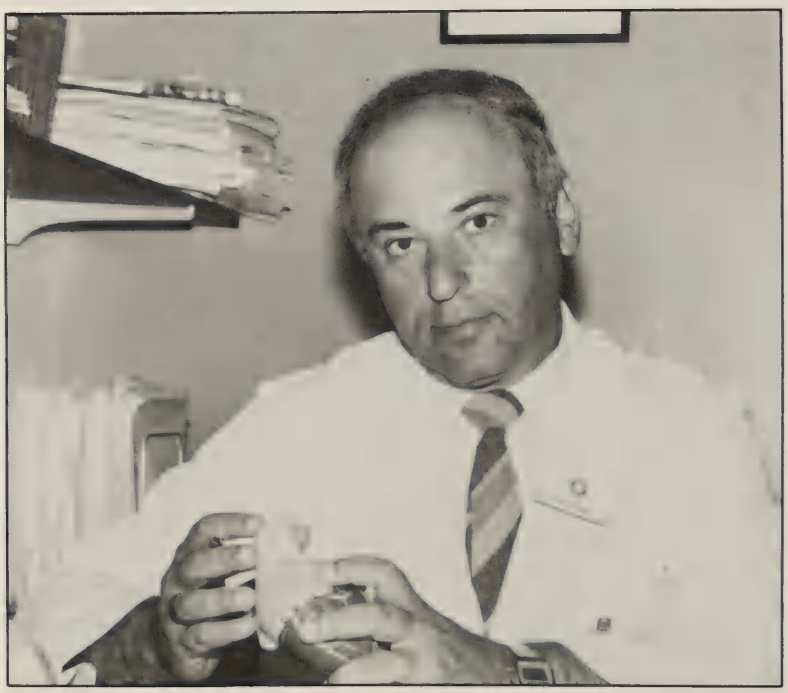
"Max has incredible courage," adds Mr. Robbin. "He's a wonderful boy with a positive self-image. He's handled being sick very well."

CHILDREN UNDERGO THE RIGORS OF OPEN HEART SURGERY

In the past, much of the surgery performed on infants was palliative — surgeons were able to improve their young patients' conditions by making temporary repairs that bought the children time until they were older and better able to undergo the rigors of more complex cardiac surgery. Now, many problems that once only could be repaired temporarily in infancy now can be corrected completely.

"We've been able to help or cure 95 percent of the children who come here with heart defects. But there's still a small group we can help temporarily through surgery when they are infants, who will not benefit from additional conventional surgery as they grow older. Hopefully, with further developments, operations also will be available for this group of patients. These youngsters may be candidates for heart transplants in the future," says Dr. Welton Gersony, director of the Division of Pediatric Cardiology.

The Hospital, which is a major center for heart transplants in adults, gained national attention when surgeons here performed a transplant in a child on June 9. J.P. Lovette, of Denver, Colorado, was brought to Presbyterian with a failing heart that hardly could pump blood through his body. Follow-



Dr. Welton Gersony, director of the Division of Pediatric Cardiology at Presbyterian.

ing his transplant, J.P. now is doing "very well," report his doctors. (See story on page 1.)

PH TRANSPLANT SERVICE PLANS A PROGRAM FOR CHILDREN

Based upon the success of the first pediatric transplant, the Transplant Service plans to begin a full-scale program for children.

"Improvement in anti-rejection drugs, especially the availability of cyclosporine, has great significance in children in terms of improving the quality and length of life." says Dr. Eric Rose, director of the Cardiac Transplant Service here.

"The number of adults, or children, who may benefit from heart transplants is very small. But, every new option we add to our arsenal of treatments brings us a bit closer to tackling heart disease," adds Dr. Rose.

Each year, more than 200 children come to Presbyterian for repair of heart defects. The problem may be simple, such as a hole between the chambers of the heart. Or, the defect may be complex, as in tetralogy of Fallot, a combination of cardiac defects in which a large hole between the ventricles and a narrowing below the pulmonary valve cause unoxygenated blood to flow through the body.

PH HAS BEEN A LEADER IN HEART SURGERY SINCE THE 1930s

Some of the earliest efforts to correct such problems surgically were performed at Presbyterian in the 1930s.

The longtime tradition of excellence began under Dr. George Hoppin Humphreys II, former director of the Surgical Service. Dr. Humphreys is recognized internationally as a pioneer in the field of cardiovascular surgery. He was one of the first surgeons in the United States to perform cardiac surgery and he performed the first such operation in New York City.

In the early 1960s, under the guidance of Dr. James Malm, director of the Division of Thoracic and Cardiac Surgery, pediatric cardiac surgeons at PH successfully repaired a child with tetralogy of Fallot. This defect, which is the most common form of cyanotic heart disease, causes its victims to turn blue because they lack sufficient oxygen.

"Since then, more than 800 operations to correct this defect have been performed here. These children have

continued on next page

PARENTS TAKE HEART: SUPPORT IS AVAILABLE

Nurse practitioner Linda O'Neill, at left, visits Gina Voorhis, 13, of Norwich, N.Y., who recently underwent open heart surgery.

"When parents are told their child has a heart defect, they feel a great sense of responsibility and guilt, especially if the patient is a newborn," says Linda O'Neill, nurse practitioner in the Pediatric Cardiology Division of The Presbyterian Hospital.

"The mother often asks herself what it was that she did during pregnancy to cause her child's heart defect. These parents need the ultimate reassurances that they aren't to blame."

Ms. O'Neill counsels parents who are told their children need open heart surgery for a congenital defect. In some cases, a temporary surgical repair can be made when the child is still an infant, allowing him to develop until he is older and better able to survive permanent surgical repairs.

"These parents are under a great deal of stress and it's important for them to talk with one another," she says. "We have a group called Heart-to-Heart for parents of children who have undergone cardiac surgery at Presbyterian."

Ms. O'Neill coordinates Heart-to-Heart activities at the Babies Hospital division of Presbyterian. This program keeps parents and children in touch with each other through a newsletter and through a "Heart Day" reunion for children who have undergone cardiac surgery at the Hospital.

"Heart-to-Heart has made a big difference in the lives of the parents of children with cardiac disease," says Ms. O'Neill. "There's little that one can do or say to make this situation better when a child has a serious heart defect, but the support that these parents offer each other has helped many families." ■

gone on to live active and productive lives," says Dr. Malm.

PEDIATRIC CARDIAC SURGEONS TACKLE MORE COMPLEX PROBLEMS

The Hospital's pediatric cardiac surgeons then branched out to repair even more complex heart defects. Surgeons here were among the first to use artificial tubes and valves to replace obstructed arteries and valves within the heart.

"Improved artificial valves now are available for patients who have missing or defective valves," says Dr. Fred Bowman, attending surgeon.

"In most of the surgery we do, we can expect long-term success with no need for further surgery," he adds.

CORRECTIVE SURGERY NOT AVAILABLE FOR SOME DEFECTS

Although surgeons have been able to repair many heart defects, Dr. Bowman says "there now is a bit of a plateau — there are some conditions for which there is no corrective surgery. For example, surgeons are trying to find a way to correct an aorta or ventricle that is too small in proportion to the rest of the heart.

"A small ventricle (the lower pumping chamber of the heart) is a common problem in children we'd like to solve. When this defect exists, the left side of the heart doesn't pump enough blood to the body.

"Single ventricle problems are common, too. Some of these can be adjusted. But we've had mixed results in trying to make two ventricles from the original ventricle. Right now, we're trying to refine techniques we use in repairing other heart defects," says Dr. Bowman.

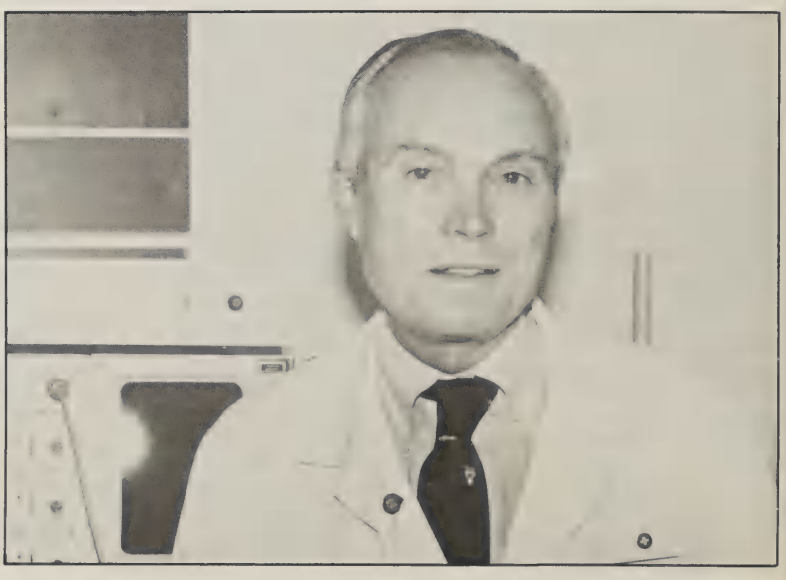
SURGERY IMPROVES QUALITY OF LIFE FOR MOST PATIENTS

In 80 percent of all heart defects, surgeons can completely repair defects or perform temporary surgery to improve the quality of life, says Dr. Keith Reemtsma, director of the Surgical Service at The Presbyterian Hospital.

"We have long been identified with the successful treatment of heart disease in infants and children," says Dr. Reemtsma.

"We're going to continue to search for ways to repair heart defects that are even more complex."

Above: Dr. Fred Bowman performs openheart surgery. Below: Dr. James Malm, director of the Division of Thoracic and Cardiac Surgery.



DEFECTS CAN BE CORRECTED WITHOUT SURGERY

Dr. Carl Steeg, at left, and Dr. Eric Martin with a balloon-tipped catheter, which is used to correct some heart defects.

Just after Isaac Mathieu Jr. turned 2 years old, his doctor discovered a heart murmur — a condition that usually points to heart disease. An electrocardiogram and other tests indicated that Isaac was suffering from pulmonary stenosis, a stuck heart valve, which eventually could cause heart failure.

A few years ago, Isaac would have had to undergo open heart surgery to correct the condition. Now, recently developed techniques can open blocked valves without surgery.

By introducing a balloon-tipped catheter into the toddler's heart, doctors were able to open the valve. The procedure, called a balloon valvuloplasty, is performed under local anesthesia and requires only a two-day hospital stay.

"When a patient undergoes open heart surgery, it usually entails a two-week hospital stay and a long recuperation at home. By using this method, the young patient can resume a normal life style immediately after leaving the hospital. Also, there's a tremendous cost savings," says Dr. Carl Steeg, director of the Pediatric Cardiovascular Laboratory at the Babies Hospital division of The Presbyterian Hospital.

"My son was active at play the day after he came home. He's doing very well," says Mrs. Isaac Mathieu Sr., of Brooklyn, N.Y.

In adults, angioplasty of coronary arteries is used to open blood vessels narrowed by atherosclerosis. A catheter is inserted through a small opening in the femoral artery in the groin and guided by X-ray to the site of the obstruction. Once in position, the area is flooded with a small amount of dye which outlines the arteries and shows the blocked area. Doctors then rapidly inflate and deflate the balloon by hand. As the balloon fills and empties, debris inside the vessel is pushed flat against the arterial wall.

Doctors use similar balloon angioplasty techniques to repair stuck heart valves and congenital narrowing of the aorta, the major blood vessel leaving the heart.

"Pulmonary stenosis is a common problem in children with congenital heart disease. Normally, the valve that's involved opens and closes 80 to 120 times a minute. In this case, the valve is like a door that's stuck. As blood flows through this passage leading from the right side of the heart to the lungs, more pressure is needed to keep up the flow. The greater the pressure, the harder the heart must work," says Dr. Steeg.

If the valve is left uncorrected, the child may suffer heart failure.

When a child has a congenitally narrowed main blood vessel called coarctation of the aorta, the defect usually is corrected surgically. In some patients, the passage may narrow again. When the condition recurs, doctors can use a balloon-tipped catheter to correct it.

"This condition should be fixed by the time a child is 5. Otherwise, the child may suffer high blood pressure, cardiovascular disease and an increased likelihood of stroke," says Dr. Eric Martin, director of Cardiovascular Radiology. ■

'NUCLEAR STETHOSCOPE' PROVIDES EARLY WARNINGS WHEN COMPLICATIONS ARISE

Dr. Linda Addonizio uses the "nuclear stethoscope" to monitor heart function in 18-month-old Ryan Rodriguez of Purdy's, N.Y.

Five hours after surgery to close a hole between the two pumping chambers of a young girl's heart, blood began to collect in the area around the heart, causing it to start to fail. Doctors were able to detect the problem almost immediately and were able to remove the blood and prevent heart failure.

The key to saving this young life, and to making painless diagnoses of children who've just had surgery, is nuclear cardiology.

"If the problems caused by the blood pooling hadn't been caught, cardiac arrest might have occurred. Fortunately, we were able to catch it before any outward signs appeared," says Dr. Linda Addonizio, a pediatric cardiologist at the Babies Hospital division of The Presbyterian Hospital.

"Instead of inserting a catheter into a blood vessel to measure cardiac output or to determine whether a drug is effective, we give the patient a small injection of a slightly radioactive substance which remains in the bloodstream for a short time. This 'tracer' enables doctors to follow the pumping action of the heart by means of a probe placed on the chest, called the 'nuclear stethoscope.' Then, we monitor the heart as it fills with blood," she says.

'NUCLEAR STETHOSCOPE' HELPS MONITOR MINUTE-TO-MINUTE CHANGES

The "nuclear stethoscope" has its own computer, which can help doctors determine minute-to-minute changes in heart function.

Instead of producing a picture of the heart, the nuclear probe gives a reading of the work the heart is doing.

"The probe works much like a Geiger counter. It picks up very low levels of radioactivity in the blood. As blood flows through the heart, the machine picks up any variation as the heart fills and empties."

DANGER SIGNS ARE RECOGNIZED AS SOON AS THEY BEGIN

If blood collects around the heart, this condition usually is accompanied by a steep drop in blood pressure and a decrease in the amount of urine the body produces.

"In some cases, it takes several hours for these signs to become apparent. Once these signs appear, they can trigger a dangerous decrease in the blood supply to the heart, brain and the rest of the body or even bring about cardiac arrest. By using the 'nuclear stethoscope,' we can measure small changes, making it possible to predict or detect a problem before it becomes life-threatening."

In addition to monitoring young patients who've just had surgery, nuclear cardiology also is used to monitor patients with sickle cell anemia, who may have signs of abnormal heart contractions under stress. Patients with Kawasaki disease often develop an aneurysm, or ballooning, of the coronary artery, and the "nuclear stethoscope" can be helpful in detecting them, says Dr. Addonizio.

'NUCLEAR STETHOSCOPE' DETECTS PROBLEMS MISSED IN OTHER TESTS

This is because young Kawasaki disease patients appear to have normal heart function in standard tests. Under the "nuclear stethoscope," however, doctors are finding that these patients' hearts fill with blood at a much slower rate than normal.

"We're trying to find which small abnormalities in heart function we can measure with this machine," adds Dr. Addonizio. "If we can detect early warning signs, we think we can provide better care."

PULMONARY HYPERTENSION CAN DESTROY YOUNG BLOOD VESSELS

In a young child, the millions of tiny air sacs in the lungs and the blood vessels that supply them multiply and grow until about age 8. These vessels must last a lifetime as the pathways for fresh oxygen and blood to be carried to the body.

Sometimes, children develop high blood pressure in their lungs — pulmonary hypertension — that can be fatal if left untreated. This condition may result from congenital heart disease, from lung disease or from unknown causes. High blood pressure in the lung causes changes in the walls of the blood vessels. To adapt to the high pressure of the blood rushing through the vessels, new cells, or scar tissue, forms and narrows the vessels. As this disease progresses, it scars some blood vessels and destroys others, eventually causing heart failure or sudden death.

"When congenital heart disease is the cause of high blood pressure in the lung, cardiac surgery can correct it or halt its progression if surgery is done before significant pulmonary hypertensive changes develop," explains Dr. Robyn J. Barst, assistant attending pediatrician at The Presbyterian Hospital.

"If pulmonary hypertension is diagnosed early enough, it appears that there is a limited period of time in which we can reverse the course of this progressively fatal disease," says Dr. Barst. "During this period, the blood vessels still have the ability to relax and to dilate, enabling us to reduce the pressure in the lungs. When the disease is in the advanced stage, the blood vessels stiffen and scarring occurs."

EARLY DETECTION AND DIAGNOSIS MAY ENHANCE QUALITY OF LIFE

Early detection and diagnosis may make an enormous difference in the quality of life of young patients with pulmonary hypertension of unknown causes.

A little girl who was brought to Dr. Barst as a 17-month-old infant with breathing difficulties and a bluish tinge to her lips now is "a pink, healthy and active child at 3½," reports Dr. Barst. "After several attempts, we found a drug that was effective," she says. "The blood pressure in her lungs now is nearly normal."

Besides shortness of breath, children with this disease suffer from fatigue, blackout spells, palpitations and chest pains.

CPMC RESEARCHERS SEEK THE CAUSE OF PULMONARY HYPERTENSION

Studies are under way at Columbia-Presbyterian Medical Center to determine the causes of pulmonary hypertension and to examine drugs to control it.

In the laboratory, Dr. Barst is looking at several chemical substances which the body normally produces to relax and contract blood vessels. "We're trying to see if there's an imbalance in these substances that may be related to the development of pulmonary hypertension."

Dr. Barst is studying drugs to control pulmonary hypertension. "We need a drug that will selectively relax only the blood vessels in the lungs," she explains. "The drugs now available dilate all of the blood vessels in the body. If we treat children at an early age and bring their pressure toward normal, they may have an excellent chance of developing new blood vessels."

Dr. Robyn J. Barst studies chemical substances the body produces that may be related to the development of pulmonary hypertension.

NEWSBRIEFS

DR. THOMAS Q. MORRIS IS NAMED PRESIDENT-ELECT OF PRESBYTERIAN

The Trustees of The Presbyterian Hospital have elected Dr. Thomas Q. Morris, Vice Dean of Columbia University's Faculty of Medicine, as President and Chief Executive Officer of the Hospital, effective January 1, 1985.

Dr. Morris will succeed Dr. Felix E. Demartini, who will continue in an active role as advisor to the new President and the Hospital until his planned retirement at the end of September 1985.

Dr. Morris received a B.S. degree from Notre Dame in 1954. After receiving his M.D. from Columbia University's College of Physicians & Surgeons, he completed his post-graduate training with the First (Columbia University) Medical Division at Bellevue Hospital from 1958 through 1962.

After two years on active duty with the U.S. Air Force Medical Corps, he returned to the Columbia-Presbyterian Medical Center in 1964 as a U.S. Public Health Service gastroenterology trainee. He also was appointed an assistant physician at Presbyterian. At the Medical Center, he rapidly rose to professor of clinical medicine and attending physician.

In 1978, Dr. Morris was appointed acting chairman of the Department of Medicine at P & S and acting director of the Medical Service at Presbyterian, a post he held for four years. In 1982, he was promoted to vice dean of the Faculty of Medicine.

Constance H. Halporn

Dr. Thomas Q. Morris

Dr. Morris was very active in medical research and teaching. He is noted for his studies of biliary function and the effects of experimental viral hepatitis on liver function.

Dr. Morris is a Fellow of the American College of Physicians, a Diplomate of the American Board of Internal Medicine, and a member of the American Association for the Study of Liver Diseases.

"Not only have we recruited the candidate with the greatest administrative experience at an academic medical center, but I believe that Dr. Morris will bring to the presidency another invaluable asset — a sense of continuity," said Howard L. Clark, Chairman of the Board of Trustees.

"Demo," as Dr. Demartini is known affectionately by his friends and colleagues, began his administrative career at PH with his appointment in 1974 as vice chairman for Professional and Scientific Affairs. In 1977, he was appointed President of the Hospital.

"During his seven years as Presbyterian's chief executive officer, he saw the total redefinition of the Medical Center, and, we believe, academic medical centers in general, especially those in urban areas," said Mr. Clark. ■

21 CPMC PHYSICIANS ARE NAMED AMONG THE NATION'S BEST BY MAGAZINE

Columbia-Presbyterian Medical Center and 21 physicians have been listed in Town & Country magazine as "The Best Medical Specialists in the United States."

The directory of specialists reflects the opinion of more than 1,300 physicians nationwide who were asked: "To whom would you turn in case of your own illness?"

The Medical Center is among 19 hospitals nationwide to merit a listing under "Outstanding Hospitals and Clinics."

Individual physicians and their specialties include:

Cardiac Surgery: Dr. James R. Malm, director of the division of Cardiac Surgery, PH Surgical Service.

Neurology: Dr. Stanley Fahn, attending neurologist; Dr. James F. Hammill, attending neurologist; Dr. J. P. Mohr, director of the PH Stroke Service; Dr. Audrey S. Penn, attending neurologist, and Dr. Lewis P. Rowland, director of the Service.

Neurological Surgery: Dr. Peter W. Carmel, associate attending neurological surgeon; Dr. Jost Michelsen associate attending neurological surgeon, and Dr. Bennett M. Stein, director of the Neurological Surgery Service.

Otolaryngology: Dr. John Conley, consultant.

Ophthalmology: (Glaucoma) Dr. Max Forbes, associate attending ophthalmologist; (Retina) Dr. Francis A. L'Esperance Jr., associate attending ophthalmologist; (Ophthalmic-Plastic Surgery) Dr. Stephen L. Trokel, associate attending ophthalmologist, and (Neuro-Ophthalmology) Dr. Myles M. Behrens, associate attending neuro-ophthalmologist.

Urology: Dr. Carl Olsson, director of the Urology Service.

Orthopedic Surgery: Dr. Charles S. Neer II, consultant.

Dermatology: Dr. Leonard Harber, director of the Service.

Plastic Surgery: Dr. Norman E. Hugo, director of the division of Plastic and Reconstructive Surgery.

Cancer and Blood Diseases: Dr. Rose Ruth Ellison, Chief of the Division of Oncology within the Medical Service; Dr. Elliott F. Osserman, attending physician; Radiation Oncology: Dr. Chu H. Chang, director of Radiation Therapy. ■

PH APPOINTS A NEW TRUSTEE

Charles D. Peebler Jr.

Mr. Charles D. Peebler Jr. was named a member of The Presbyterian Hospital Board of Trustees on October 17. Mr. Peebler is president and chief executive officer of Bozell & Jacobs Inc., an advertising firm.

He serves on the boards of numerous foundations and corporations including the United Way of America, the Advertising Council and the University of Nebraska Foundation.

Mr. Peebler is a graduate of Drake University.

"Mr. Peebler's expertise in marketing, communications and advertising will be of great value to the Hospital," said Dr. Felix E. Demartini, president of Presbyterian. ■

MS CARE CENTER OPENS AT CPMC

A new Multiple Sclerosis Care Center has opened at Columbia-Presbyterian Medical Center. The new center, which will serve more than 300 patients annually, is supported by the New York City Chapter of the National Multiple Sclerosis Society.

Dr. Charles R. Plank, associate attending neurologist, and Dr. J.R. Miller, associate attending neurologist, are co-directors of the center. Both are studying the possible causes of MS, a progressive disease of the central nervous system that destroys the myelin sheath around nerve cells.

"We can't stop the progression of MS, but we can offer patients more in terms of coordinated care," says Dr. Plank.

"In addition to the availability of clinical programs for the center's patients, there also will be research studies for those who wish to participate," says Dr. Miller.

Patients in need of a medical and social support network are linked with the medical and community services they require through the center. Michele Madonna, R.N., clinical coordinator of the center, is developing related ongoing educational programs for patients and health care professionals.

The center is one of two MS care centers in the New York area. ■

Front row, from left: Susan Bowar-Ferres, Michelle Madonna, Martha E. Haber, and Dr. Robert Slater, of the National MS Society. Second row, from left: Dr. Charles R. Plank, Dr. J. R. Miller, Dr. Felix E. Demartini, Carol M. Kurzig, executive director of the New York City MS Society Chapter, Dr. Thomas A. Blumenfeld, Dr. Jerry G. Blaivas, Eileen Kellner, Dr. Lewis P. Rowland.

IN MEMORIAM

FREDERICK EATON

Frederick M. Eaton, a longtime trustee and past Chairman of the Board of The Presbyterian Hospital, died October 3.

In 1955, Mr. Eaton was elected a trustee, a post he held for almost 30 years. He became chairman of the board in 1974. In 1961, while serving as a trustee, he assumed the co-chairmanship of the Medical Center's Development Fund Committee.

During his two-year tenure as chairman of the board, Mr. Eaton was instrumental in planning to bring operating costs and income into balance and in improving operating efficiency. Many important new facilities were completed under Mr. Eaton's leadership, including the General Clinical Research Center and the Transplant and Hemodialysis Unit.

Following his election as chairman emeritus of the Board of Trustees in 1976, Mr. Eaton remained active as a trustee and served as a member of the Executive Committee.

Mr. Eaton is survived by his wife, the former Justine Catlin Allen, a daughter, two sons and eight grandchildren. ■

VERIFICATION CALLS ARE UNDER WAY FOR DIRECTORY

Many alumni of The Presbyterian Hospital are receiving telephone calls to verify information on their listings in the new PH Alumni Directory.

The directory will feature alphabetical listings of each alumnus and will include class year, residence address and phone number, and business or professional information when available.

Harris representatives are inviting alumni to purchase copies of the directory, scheduled for release in the spring of 1985.

Alumni who have not heard from the publisher by January 15, 1985, should contact the publisher to order a copy. Write to: Denise Fitzgerald, Customer Service Representative, Bernard C. Harris Publishing Company, 3 Barker Avenue, White Plains, N.Y. 10601. ■

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STETHOSCOPE

REHABILITATION MEDICINE ADDS LIFE TO YEARS **JANUARY 1985**

40 N 1

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STETHOSCOPE

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IMPORTANT NOTICE TO OUR READERS

You are invited to participate in The Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity, unitrust life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information, call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

ABOUT THE COVER

Eliseo Calderon Panizo, of Lima, Peru, who suffers from paraplegia, exercises with a freeweight under the direction of physical therapist Barbara Ast to strengthen the muscles in his upper arms.

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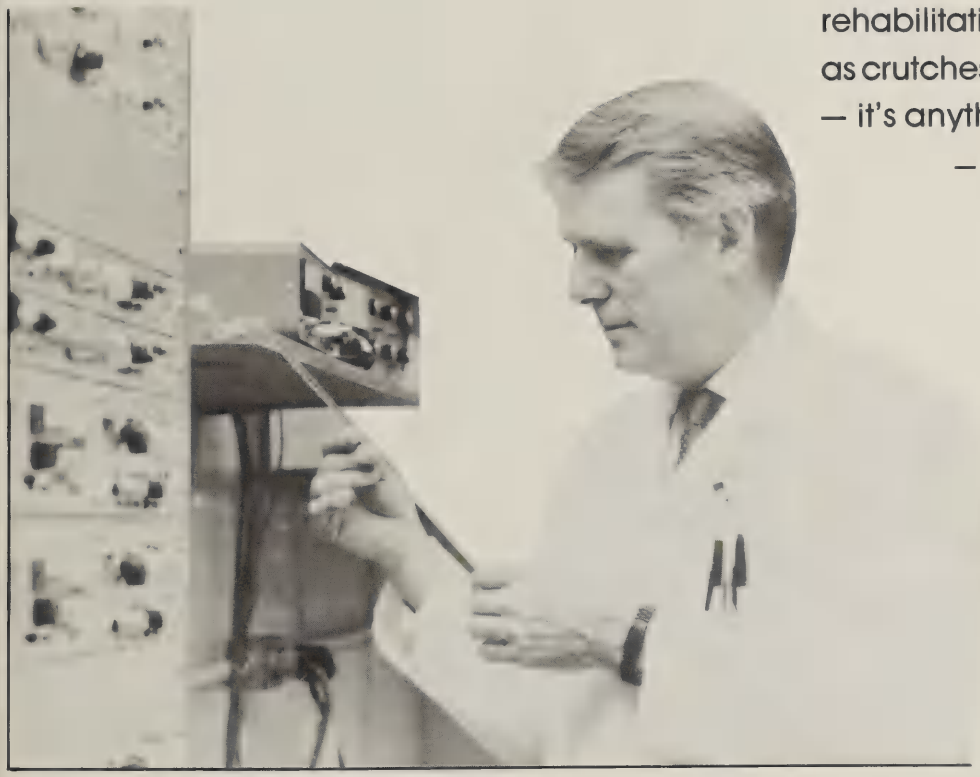
REHABILITATION MEDICINE ADDS THE FINAL TOUCHES TO HEALING



"People think of rehabilitation medicine as crutches and braces — it's anything but that . . ."

— Dr. John A. Downey

Dr. John A. Downey, director of the Rehabilitation Medicine Service.

Medical advances now routinely add years to people's lives. In many cases, rehabilitation medicine helps bring life to those years.

After a patient successfully pulls through a life-threatening crisis, he often has a long and frustrating struggle to return to a productive life.

"People think of rehabilitation medicine as crutches and braces — it's anything but that," says Dr. John A. Downey, director of the Rehabilitation Medicine Service at The Presbyterian Hospital.

Some patients must learn how to walk again, to pick up a fork or a pen, to flip a light switch. Many patients who enjoyed the freedom of walking must learn to appreciate life from the vantage point of a wheelchair. Still others will successfully undergo rehabilitation and return to their homes, jobs and families.

Doctors, residents, nurses, and physical and occupational therapists care for patients in the Hospital's rehabilitation medicine clinics, gyms and patient care units.

Meantime, researchers at the Columbia-Presbyterian Medical Center are looking into the causes of such problems as causalgia, a mysterious syndrome of burning pain, and the physiological mechanism of hot flashes, which affect more than 25 million women nationwide. Scientists also are looking into the causes of new muscle weakness, pain and unaccustomed fatigue reported by many people who recovered from polio 30 years ago.

"We're one of the most research-oriented medical centers in tne United States," says Dr. Downey.

"Our approach is to minimize the effect of a patient's illness — to ask what's right with a patient, as opposed to what's wrong, and to capitalize on that ability — while developing a solid base of treatment for tomorrow."

PATIENTS WORK 9-TO-5 ON IN-PATIENT REHABILITATION UNIT

Physical therapist Mary Coogan encourages and assists Iris Bailey to move from a sitting to a standing position. In lower photo, William Murphy practices fine-hand coordination as he recovers from a stroke.

At the beginning of a day, rehabilitation patients wake up, groom themselves, dress and eat as if they were heading out for a full day's work.

For good reason: a 9-to-5 work day of therapy lies ahead for patients who undergo treatment in the aftermath of a stroke, disabling arthritis, spinal cord injury or amputation of a limb.

"Most of the world centers around a routine, whether it's work, school or homemaking. Patients in the In-Patient Rehabilitation Service have a certain amount of work to do in their therapy and we try to make life here as close as possible to the real world," explains Dr. Ann Breuer, director of the unit at The Presbyterian Hospital.

For one patient, the hard work is grasping a fork, lifting it from a plate and bringing it to his mouth to eat a meal. For the woman next to him, the task is to develop the muscle skills to use a bathroom by herself. Another patient must learn how to roll over in bed on his

Physical therapist Gay Rosenberg checks Ria Halvern's posture and position as the patient negotiates the path between the parallel bars. Below, Dr. Ann Breuer tests Edgar Bradberry's hand for signs of strength and neurologic recovery.

own and how to go from a lying to a sitting position. Others relearn the art of balancing their bodies with a brace or artificial limb to help them return to their jobs and homes.

"Once a patient learns a skill, we expect him to keep using it here in the unit and to take that skill home with him and incorporate it into his life," says Dr. Breuer.

When the simple ability to perform the tasks that most people take for granted disappears after a stroke or spinal cord injury, rehabilitation medicine specialists work together to restore as much of the original skill as possible.

"Over a period of weeks or months, the patients go from being the most dependent to the most independent we can make them," says Dr. Breuer.

To accomplish this, a team of rehabilitation physicians, nurses, physical therapists, occupational therapists, social workers, a recreational therapist, speech therapist and a psychiatrist work with patients in the unit.

"Physical and occupational therapy is a lot of work for patients. They reach one goal and we set another," explains Dr. Breuer. "There's a lot of satisfaction as goals are reached, but there's also a challenge. The process is overwhelming for many patients because they've lost a lot of control. Our job is to help them learn how to control their lives again. They'll still have their disabilities, but they'll be able to function with them in society."

As patients progress in their rehabilitation, they are allowed to go home for a day, or a weekend, to practice the skills they learned at PH.

"Patients test out at home what they've learned here and then come back and tell us what worked and what didn't," says Dr. John A. Downey, director of the Rehabilitation Medicine Service at PH.

"While a patient might ask herself, 'Can I be the mother I once was? Can I serve meals to my family?' the family is equally apprehensive. Members might question their ability to handle the parent's artificial limb or to bathe the patient," says Dr. Downey.

"Such home visits are part of the healing and treatment for our patients and their families. As they go home and return to the Hospital, we build each patient up so that he can return to his own life. It's a chance for them to see that there's light at the end of the tunnel."

THE HEAT IS ON AT CPMC; WHAT TRIGGERS HOT FLASHES?

The woman's beau was from the South. He proposed marriage and she turned it down. Hot flashes dominated this woman's life to the point that they won over her love.

"I asked myself, 'How can I live in the South with my hot flashes?' I just couldn't start a relationship in this condition. The hot flashes occurred at least once an hour. I couldn't sleep through the night. If he had said Alaska, it might have made a difference."

Another woman had worked for one firm for 25 years before taking a new job. But shortly after starting the new job, she began suffering from hot flashes. Three years and 11 jobs later, her fine career history was marred because during her hot flashes, her mood suddenly would shift. Every time she took dictation, she broke into tears.

Although hot flashes have been around as long as women have been going through menopause, only recently have women begun to discuss openly what once was considered a taboo subject.

A hot flash is a sudden sensation of intense heat, followed by a flushing of the upper body, and accompanied by profuse sweating. Sometimes, palpitations of the heart occur, then chills, and in some cases, depression or mood changes.

Now that women have begun talking to one another about their experiences with hot flashes, support groups are being formed to discuss the problem and the medical community has been spurred to undertake research into this area.

Dr. Fredi Kronenberg is studying the body's temperature regulation system to understand what happens during a hot flash.

CPMC IS ONE OF A FEW MEDICAL CENTERS TO STUDY HOT FLASHES

"The first detailed research into the physiology of hot flashes was begun in 1975. Although clinical studies of different medications to ease the symptoms have been conducted, researchers at Columbia-Presbyterian Medical Center are among the few groups in the world looking at the physiological mechanism of a hot flash," says Dr. Fredi Kronenberg, associate research scientist in Rehabilitation Medicine.

The association between hot flashes and menopause was made more than 100 years ago. "Hot flashes are related to the loss of estrogens, female sex hormones, which occurs during menopause. Estrogen has long been prescribed to women suffering from hot flashes because it lessens the symptoms. But in 1974, studies showed that estrogen therapy caused the lining of the uterus to grow and increased the risk of cancer," says Dr. Kronenberg.

SOME WOMEN ENDURE THE SYMPTOMS RATHER THAN RISK TAKING ESTROGEN

Some women refuse to take estrogen because of the threat of cancer. Others who take it for years and then stop, find that the hot flashes recur, even decades after menopause.

"No one knows how estrogen works. While we know that hot flashes are tied to estrogen withdrawal, we don't know what sets off each hot flash," says Dr. Kronenberg.

The treatment for hot flashes now available is limited at best, says Dr. John A. Downey, director of Rehabilitation Medicine.

CPMC RESEARCHERS LOOK AT THE BODY'S TEMPERATURE CONTROL SYSTEM

"Estrogen can suppress menopause symptoms, but it isn't a cure for all the problems of menopause. It appears that something in addition to estrogen is involved. Researchers here are looking at the interaction between the temperature regulation system and hormones, and how these factors combine to create a hot flash," says Dr. Downey.

Normally, the body has a heat-regulating system that works like a thermostat in a house. If it is set at 77, for instance, and the room temperature rises above that, it shuts off. If the temperature falls below that setting, it automatically turns on.

"The thermoregulatory responses observed during a hot flash are the same responses used to dissipate excess heat in situations of overheating, such as after vigorous exercise," says Dr. Kronenberg. "The body acts as if it's overheating, but it really isn't. The focus of our research is to understand the underlying mechanism."

In studying temperature regulation, researchers looked at what happens

during a fever. When fever occurs, the body's thermostat is reset higher — first, the body shivers to increase its temperature, then, the thermostat returns to normal, and the fever breaks, accompanied by sweating to help cool the body to a normal temperature.

"A hot flash seems to be the inverse of a fever," explains Dr. Kronenberg. "Sweating takes place first, and the internal body temperature drops, even though the person feels that she is extremely hot. After that, the body shivers and internal temperature rises again. We'd like to be able to explain why this happens."

TEMPERATURE AND HORMONAL CHANGES ARE MONITORED

In the search for what triggers a hot flash, CPMC researchers are studying women who have at least one of these episodes an hour. The women are monitored for changes in skin temperature, internal temperature, heart rate, blood flow in their fingers, perspiration and skin resistance. Blood samples also are taken to measure hormonal changes that occur during a hot flash.

"By looking at the relationships between the hormonal and physiological changes that take place, we hope to understand how both interact," the researcher explains.

"We believe a substance is released in the hypothalamus, the part of the brain which controls the body's temperature and also is an important site for the control of certain reproductive hormones. If something is, in fact, released there, it could contribute to the thermoregulatory and hormonal changes that take place during a hot flash. As we piece together all of these data, we will be looking for the initial trigger," says Dr. Kronenberg.

Besides documenting the physiological changes, Dr. Kronenberg also listens for clues from women who explain how stress, heat and drinking hot beverages had an effect on a hot flash. "People are too quick to dismiss such subjective reports," she explains.

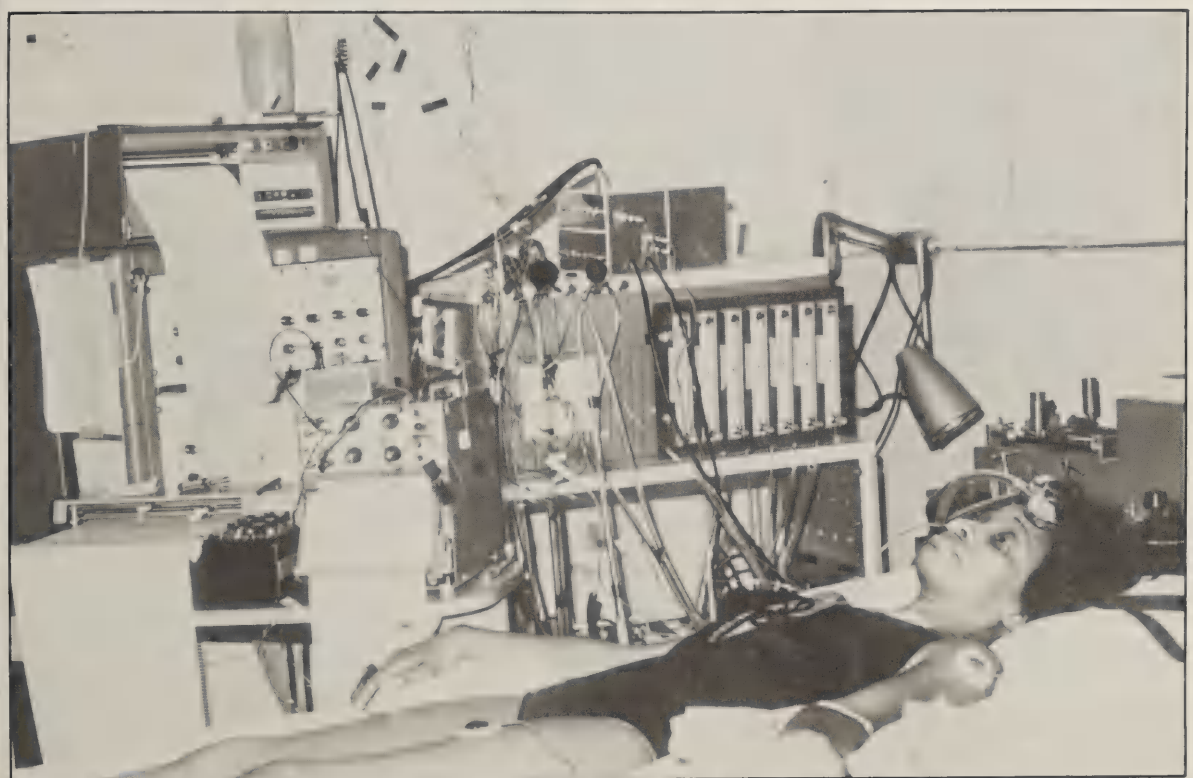
While probing the cause of hot flashes, CPMC researchers also are asking if there are any factors that might point to a predisposition toward hot flashes.

75 PERCENT OF ALL WOMEN WILL GET HOT FLASHES IN THEIR LIFETIMES

"Various studies indicate that 75 percent of all women will get some hot flashes — whether they occur once a month, once a week, once a day or once an hour," says Dr. Kronenberg.

Most of the affected women can expect their hot flashes to continue for about two years. Some women suffer from them for anywhere from five years to 30 years.

"It's a major public health problem for a large group of our population," says Dr. Downey. "Because of the side effects that come with using estrogen and the fact that menopause can return when the drug therapy is discontinued, we're interested in finding a safe and effective treatment for hot flashes. CPMC is one of a small number of medical centers in the country that is taking a broad approach in the attempt to understand hot flashes."



Leads are attached to a subject during a study to measure physiological and hormonal changes as a hot flash occurs.

CAUSALGIA: DOCTORS SEEK ANSWERS TO BIZARRE PAIN SYNDROME

Causalgia patient Ruth Karczewski.

The hand pictured at left shows normal temp
areas along the fingers indicating low skin te
Below: Dr. Richard L. Bruno and Dr. Stanley

Ruth Karczewski walked from the living room, which was 76 degrees, to her kitchen, where the temperature was 71. Immediately, she experienced a burning pain in her upper arm, followed by an intense throbbing, as if someone were banging her arm against the wall.

Once an episode like this started, it lasted several hours. However, later, when she walked into another room where the temperature was slightly different, the problem started all over again.

Because of this puzzling pain syndrome called causalgia, which means burning pain, Mrs. Karczewski had to plan every move carefully. When making dinner, she had a thick glove handy to remove frozen foods from the freezer. When shopping, or eating out in restaurants, she carried a heavy sweater along to help her compensate for air conditioning or for going from indoors to outdoors.

"I learned how to live with the pain because I couldn't imagine living as a recluse," says Mrs. Karczewski, who now lives in New Jersey.

PAIN FORCED CAUSALGIA PATIENT TO ABANDON HER DREAM HOME

She and her husband gave up their dream home high in the Colorado mountains because the drastic temperature changes that came with living in the mountains were too much for Mrs. Karczewski.

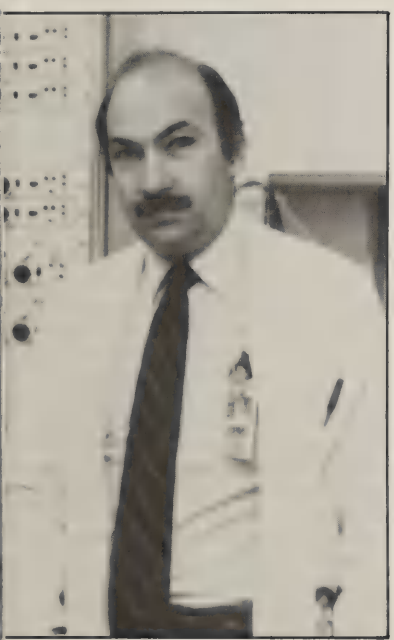
After seeking solutions for years, the woman eventually was referred to The Presbyterian Hospital, where doctors studied the conditions that caused her pain and found a drug to control it.

"The doctors at Presbyterian turned the tide for me. Occasionally, I have a small amount of discomfort, but life is much more bearable now," says Mrs. Karczewski.

"We found that her blood vessels became narrowed during these episodes of pain, so we placed her on medications that caused the blood vessels to open up. She's been virtually pain-free ever since," says Richard L. Bruno, Ph.D., associate research scientist and clinical research coordinator in Rehabilitation Medicine with the Columbia University College of Physicians & Surgeons at Columbia-Presbyterian Medical Center.

While the number of people in the United States who suffer from this bizarre pain syndrome is unknown, Dr. Bruno receives calls from people around the country with suspected causalgia.

bution while the hand on the right has dark nd low blood flow that occurs in causalgia.



"They're desperate because they're in constant, terrible pain all the time and they just can't function," says Dr. Bruno.

Causalgia first was described in medical annals during the Civil War in association with gunshot wounds. As bullets tore into a soldier's arm or leg, the peripheral nerves became damaged, resulting in causalgia.

The syndrome can occur following a small cut, a bone fracture or from trauma involving a peripheral nerve, just below the surface of the skin. Weeks or months after the injury, the affected arm or leg either becomes hot or cold, sweats profusely and turns beet red, blue/black or white. Then, the extreme burning pain which characterizes causalgia sets in. In some patients, like Mrs. Karczewski, causalgia can develop on its own.

TWO KINDS OF PAIN AFFECT THOSE WHO SUFFER FROM CAUSALGIA

People with causalgia suffer two kinds of pain. The first type is a deep, searing pain which can be triggered by changes in temperature or by strong emotions. The other type is a hypersensitivity of the skin, in which the slightest touch, a bedsheet or even a breeze coming through the window causes terrible pain. At times, both symptoms may appear together.

"Causalgia patients all have some disturbance of the blood vessels," says Dr. Bruno. "For example, some notice that their feet, hands, legs or arms have a tendency to turn red. There are causalgia patients whose limbs turn white and cold.

"Because these symptoms seem innocuous to many patients who experienced them early, these people just ignore them. That's unfortunate, because studies have shown that early treatment seems to be effective."

Dr. Stanley J. Myers, attending rehabilitation medicine physician, says, "Some causalgia patients stop moving their arms or legs because it's too painful. Secondary atrophy then sets in and these patients begin to suffer a loss of calcium from their bones or develop fixed deformities of the joints. After a while, they can't get around at all."

Many patients develop emotional problems, such as depression and anxiety, as a result of their causalgia, Dr. Myers adds. "Some causalgia sufferers have been known to quit their jobs and, under extreme circumstances, commit suicide."

At the Columbia-Presbyterian Medical Center, researchers are studying and documenting changes in what happens to the autonomic nervous system when causalgic pain occurs. It is the autonomic nervous system that controls the diameter of the body's blood vessels, and thereby controls blood pressure, blood flow and skin temperature.

There are two components within the autonomic nervous system. The sympathetic nervous system governs involuntary responses, such as when an anxious public speaker's hands get cold and clammy. When activated, this system shuts down the blood vessels in the skin and turns on the sweat glands. The second part, the parasympathetic nervous system, allows the body to slow down and recoup after a stress-producing event.

"We study each patient under conditions that caused the pain," says Dr. Bruno. "For example, we increase the room temperature and then bring it down and watch what happens."

Extensive autonomic testing includes measurements of skin and muscle blood flow, blood volume, skin temperature and perspiration.

"In Mrs. Karczewski, we found that her sympathetic nervous system turned on excessively with small drops in room temperature. Her heart beat faster, her blood pressure increased and her blood vessels constricted," says Dr. Bruno.

DRUGS ACT ON THE NERVE ENDS AND HELP MEDIATE THE PAIN

By placing this patient on a drug that blocks the chemical signals from the sympathetic nervous system, the blood vessels opened and the woman's pain was relieved.

"It's like putting cement in the nerve endings near the blood vessels. The medication prevents the chemical messages from being received, and the patient's pain decreases," says Dr. Bruno.

Only in the last few years have researchers learned more about the role of chemical messages within the nervous system and that they can mediate the pain in these patients.

PHYSICAL AND OCCUPATIONAL THERAPY MAY HELP SOME PATIENTS

Other treatments for causalgia include physical and occupational therapy, in which the patient is gradually desensitized so that he can tolerate movement. ■

PHYSICAL THERAPISTS EXERCISE THE POWER OF TOUCH

Georgia Riedel demonstrates an upper body exercise for 14-year-old Marcelo Mentzingen of Brazil. At right, Paul Ribera, chief of Physical Therapy.

The laying on of hands has been associated with healing since man first walked the earth. Even in this age of high-tech medicine, the salutary effect of touch and human contact remains undiminished.

"A patient receiving physical therapy knows that he's not only being cared for but cared about — that's the intangible value of human-to-human contact that can't be replaced by the most advanced technical equipment," says Paul Ribera, chief physical therapist at The Presbyterian Hospital.

Physical therapy provides relief for patients with conditions ranging from simple sprains to complex physical disabilities, respiratory problems, neurological diseases and trauma.

Regardless of the age of the patient, physical therapy aims to preserve functional ability, whether it is teaching a stroke patient to roll over in bed, teaching a patient with low-back pain how to bend and to lift properly, or whether it is helping a paraplegic to walk with braces and crutches.

"A physical therapist sets treatment goals and reaches them by using therapeutic exercises and by teaching patients a range of special techniques to restore their balance in sitting, transferring themselves from a bed to a wheelchair and walking on level surfaces and stairs as well as many other forms of motion. By increasing a patient's range of motion, we work to help a patient use an injured limb again," Mr. Ribera explains.

When a patient is in pain, lacks range of motion, has decreased muscle power or swelling, a therapist might administer heat, cold, electricity, light and water to ease the problem. "Physical therapists also teach patients to use artificial limbs, braces, ambulatory aids and devices, such as wheelchairs," he says.

"The experience of 'hands-on' is a tremendous confidence builder to the individual the therapist is working with. If a patient is walking for the first time after an accident, a hand around his waist lets him know he has my support and boosts his confidence and trust," says Georgia Riedel, a physical therapist at Columbia-Presbyterian Medical Associates on Manhattan's Upper East Side.

Because a physical therapist works with each patient in regular daily sessions, he gets to build a relationship with the patient that often isn't possible in other areas of medicine.

OCCUPATIONAL THERAPY RETURNS PATIENTS TO THE BUSINESS OF LIVING

Fran Kraver, chief of Occupational Therapy, uses a dynamometer to measure hand strength in Carlos Henriquez. In upper and lower right photos, Madeleine Baczynski works with therapeutic clay to strengthen the muscles of her fingers.

When a young mother who is bound to a wheelchair is faced with the task of caring for her infant alone, an occupational therapist can help the woman to learn to handle the child safely.

In this instance, the patient had cerebral palsy, and had to learn to wheel her chair while holding the child. The problem was solved by fabricating a special harness to secure the infant. The mother also learned how to diaper the baby and how to feed him.

"Occupational therapists work with people whose lives have been disrupted by a disabling illness, an accident, birth defects and emotional or developmental problems," says Fran Kraver, chief of Occupational Therapy at The Presbyterian Hospital.

"As we work with a patient in restoring confidence, our goal is to help him return to the highest level of functioning that is possible within his limitations and to make him as independent as possible in his daily life," she explains.

For instance, if a patient who is an accountant has suffered a stroke, occupational therapists prescribe special exercises and activities to help him return to his office. For the policeman who suffered a severe hand burn, an occupational therapist designs and builds a complex hand splint. The woman who lost a leg as a result of diabetes learns how to use and care for an artificial limb under the direction of an occupational therapist.

A child who suffers from a developmental problem, such as cerebral palsy, cannot get into a sitting position or use his hands because of the disability, so therapists work with him to aid him in better utilizing his hands or to hold his body in a way that makes it easier for his parents to feed him.

PATIENT'S STRENGTHS AND WEAKNESSES ARE EVALUATED FIRST

"Each patient's strengths and weaknesses are evaluated before occupational therapy treatment begins," says Ms. Kraver. "In evaluating a stroke patient, for example, a therapist considers motion of the upper extremities, as well as strength, sensation and coordination. Then the therapist assesses the patient's ability to feed, dress and groom himself."

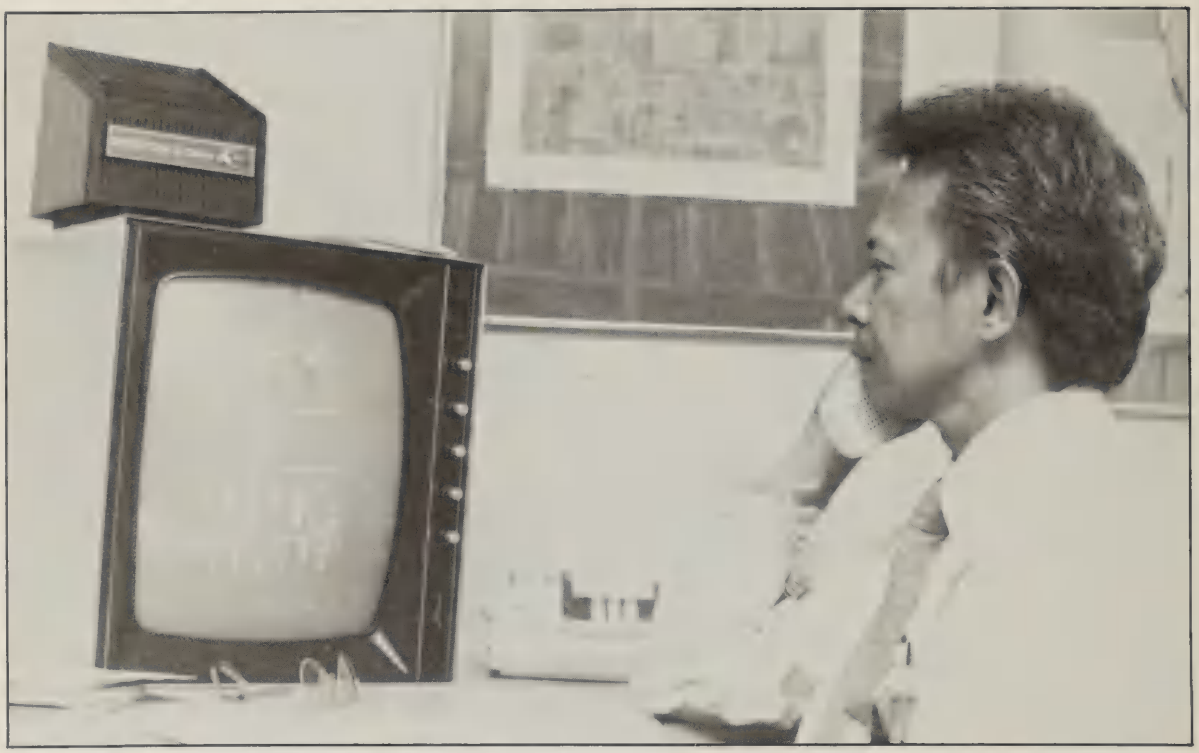
Exercises and activities such as crafts, games, writing and stacking objects are used by occupational therapists to help patients regain their manual abilities. The patients then translate these new skills into such practical activities as holding eating utensils, dressing themselves and cooking meals.

If a patient cannot return to his profession, vocational counseling is available. If a homemaker needs her kitchen at home rearranged to accommodate her disability, an occupational therapist may go to the home and assess the environment and recommend changes to help the woman become more self-sufficient.

"Each therapist gets to know each patient well — their fears, goals, hopes, needs and how they feel about returning home," says Ms. Kraver.

"The progress a patient makes can be slow, and that may be frustrating," she adds. "In some cases, we have to re-examine our goals. But the therapist and the patient work together to establish goals mutually that will hasten the return to an independent and productive life."

REMOTE MONITORING PROTECTS THE SPINAL CORD DURING SURGERY



Dr. Erwin G. Gonzalez monitors signs throughout scoliosis surgery to ensure the patient's safety.

The body's spinal cord is much like a vast electrical switching station, serving as the pathway for messages that link the body to the brain. Damage to the fragile spinal cord can disrupt these circuits, resulting in partial disability or complete paralysis.

Most spinal cord injuries are the result of traffic accidents, falls and diving accidents. Damage also can occur during surgery to straighten the spine. But, a computerized monitoring system used extensively at The Presbyterian Hospital can reduce significantly the risk of spinal damage during surgery.

When orthopedic surgeons straighten the spine of a scoliosis patient, they hook a stainless steel rod to the top and bottom of the spine to keep the back straight. During surgery, they also lengthen the shortened, twisted spinal cord. If they accidentally stretch the spinal cord too far, its blood vessels, nerves and cells risk possible irreparable damage.

"In order to protect the spinal cord, we monitor the patient during surgery to predict the neurological outcome of the lengthening process. Although it's not a guarantee that no problems will occur, this technique, called somatosensory evoked potentials monitoring, helps ups to minimize any possible damage," says Dr. Erwin G. Gonzalez, director of the Rehabilitation Medicine Clinics and Residency Training Program at Presbyterian.

At Presbyterian, more than 475 surgical procedures are performed each year in which specialized monitoring is needed to protect the patient. Besides spinal cord lengthening, the monitor also is used in some patients during surgery for spinal stenosis — a narrowed canal of the spinal column — and in total hip replacement.

Doctors test the patient constantly during surgery by stimulating the foot with a series of small, painless electric signals. The nerve impulses created by these signals must travel through the spinal cord on their way to the brain. Small electrodes attached to the scalp record these impulses when they arrive. If these impulses vary significantly during surgery, the surgeon is told that he is disturbing the spinal cord and can modify the procedure accordingly.

"If there are any danger signs, such as delayed response to the brain, orthopedic surgeons can make adjustments, or reposition the rod being installed to help straighten the back," says Dr. Gonzalez. "In some cases, if it would compromise the spinal cord and result in paralysis, surgeons remove the rod."

While a rehabilitation medicine technician monitors each patient in the operating room, Dr. Gonzalez simultaneously watches the same signs throughout the surgery from a monitor in his office.

"The ability to transmit electrical signals via video cable from the operating room to the monitor in the doctor's office is a major innovation initiated at Presbyterian," he says.

Orthopedic surgeon Dr. Hugo A. Keim, who performs more than 150 scoliosis operations a year at PH, says: "Sensory evoked potentials monitoring is to us as an electrocardiogram is to a cardiac surgeon. It gives us a reading that enables us to check for neurological damage and it makes surgery infinitely safer."

REHABILITATION TREATS THE PATIENT'S EMOTIONAL AS WELL AS PHYSICAL NEEDS

The young man was a few months shy of graduating from professional school, was engaged to be married and had a job lined up. He and his fiancee were out on a date, the car stalled and he got out to push it to the side of the road. A truck came by, struck him and when he woke up in the hospital, he learned that he never would walk again.

"When the doctors told him his legs were paralyzed, he lapsed into a weeklong state of disorientation. But he worked out his psychological distress, underwent a rehabilitation program and now is a successful businessman," says Dr. Charles Siegal, consulting psychiatrist for the Rehabilitation Medicine Service at The Presbyterian Hospital.

Many stages of psychological upheaval and adjustment accompany the loss of a leg or a major part of the body through paralysis or amputation.

"When patients first learn that they are disabled permanently, they deny it. But their denial wears down the more they begin to function for themselves," adds Dr. Siegal. "It is at this point that the mourning process over the loss begins."

Special help may be needed, as well, by a patient who neither denies his condition nor develops a depression. "Such a person often tends to be an ideal patient on the floor, but then goes home and vegetates. Society tends to have a limited view of what a disabled person can do and some patients are overcome by this negative point of view. Someone like this doesn't use the functioning skills they're taught here," says Dr. Siegal.

Faye Bastian, R.N., chats with knee implant recipient Sophie Voss during an evening visit to patients' rooms.

REHABILITATION STAFF IS ATTUNED TO PATIENTS' EMOTIONAL NEEDS

The staff and nurses are attuned to any changes of mood that a patient might express from day to day. If any changes occur, we try to find out why," says Dr. Ann Breuer, director of the In-Patient Rehabilitation Unit.

"That's why it's important to notice whether a patient is especially angry, depressed or withdrawn," says Joanne Shiffman, Nursing Care Clinician for the unit.

"As we work with patients, we listen to them. The nights often are a lonely and isolated time for patients after an active day of therapy. We offer support to help the patients deal with the stage of disability they're experiencing," explains Mrs. Shiffman.

As a team, the staff is used to working with the various stages a patient goes through in adjusting to a disability. But if there is an underlying psychological problem, they rely on the insights of the unit's liaison psychiatrist.

Dr. Siegal explains, "Many patients come here with a definition of rehabilitation that is different from the staff's definition. Some patients expect to get better physically, although they've suffered disabling, permanent neurological damage. When they come in with the idea that they'll go back exactly the way they were before, that's when they need extra support from the staff or from a psychiatrist experienced in rehabilitation," says Dr. Siegal.

The staff talks to patients, gets them to express their feelings and encourages them to vent their anger.

THE GOAL: RETURNING AS A PRODUCTIVE MEMBER OF THE COMMUNITY

While undergoing rehabilitation, each patient's goal is to become a functional member of the community. Doctors, nurses, social workers, physical and occupational therapists and vocational guidance workers all work with patients to hasten their return home.

Because a defeatist attitude soon can result in the loss of all the skills learned in the unit, the staff gives patients positive feedback and praise on each accomplishment as well as constant emotional support.

After a patient undergoes the denial process and a period of anger and mourning, he usually rallies. "Some need follow-up care for their medical problems. Others need psychological care to support them as they strive to function independently. These are the patients who have had pre-existing psychological conflicts," says Dr. Siegal. "Many people have solid character traits and, we hope they're prepared to go back into the world." ■

NEWSBRIEFS

PH INAUGURATES A NEW ERA WITH MODERNIZATION CELEBRATION

The Presbyterian Hospital's $496 million construction and modernization program — the largest of its kind in the nation — was launched during a ground-breaking ceremony at the Columbia-Presbyterian Medical Center campus on October 17.

New York state and city dignitaries, including Mayor Edward I. Koch, joined Hospital and Columbia University officials in celebrating the program to rebuild the Medical Center.

Plans call for a new 775-bed hospital building overlooking the Hudson River, a 300-bed community hospital at the northern end of Manhattan and extensive renovation of existing buildings. The various units of the Medical Center will be consolidated and interconnected under the plan. The modernization program also will feature the construction of an 80-bed long-term care facility, as well as a day care program and home health agency. The Hospital also is creating a network of new PH-affiliated primary care physicians who will establish their practices throughout the Washington Heights/Inwood community.

During a ceremony in the Hospital garden, PH President Dr. Felix E. Demartini told officials and guests: "I believe that this Medical Center will be a role model for academic medical centers throughout the country. This is so not only because of the efficient and functional design of our buildings, but because of the community health network the new Presbyterian Hospital will support."

PH President Dr. Felix E. Demartini, at left, and Howard L. Clark, chairman of the board of trustees, inspect an aerial view of the new community hospital on October 17.

Dr. Henrik Bendixen, vice president of health sciences and dean of Columbia University's College of Physicians & Surgeons, told reporters at a news conference, "The new Center will have the edge over others . . . both in terms of the building program and the greater proximity of science to patient care."

Other speakers included Michael I. Sovern, president of Columbia University; Monsignor Thomas Leonard, of Community Board 12; Mayor Koch; Anthony Watson, executive director of the Health Systems Agency of New York City; and Dr. David Axelrod, commissioner of the New York State Department of Health. Howard L. Clark, chairman of the Board of Trustees at Presbyterian, served as master of ceremonies.

NEW PH ALUMNI DIRECTORY IS SCHEDULED FOR RELEASE IN APRIL

Listings for the new PH Alumni Directory have been verified and completed and the publication is scheduled for release in April.

The Harris Publishing Company is compiling the new directory, which will feature alphabetical listings of each alumnus and will include class year, residence address and phone number, and business or professional information when available.

Data was obtained from questionnaires and from information that appears on alumni records.

Harris representatives also are inviting alumni to purchase personal copies of the directory.

Alumni who have ordered copies but have not received them by May 15, or alumni who would like to purchase a copy and have not previously placed an order, should contact the publisher. Write to: Denise Fitzgerald, Customer Service Representative, Bernard C. Harris Publishing Company, 3 Barker Avenue, White Plains, N.Y. 10601.

BABIES HOSPITAL TO PARTICIPATE IN TELETHON

The Babies Hospital division of The Presbyterian Hospital will be one of four regional hospitals to participate in a telethon to raise money for research into children's diseases.

The Children's Miracle Network Telethon, sponsored by the Osmond Foundation, will be broadcast June 1 and 2 on Channel 9, WOR-TV, in New York. ■

DECEMBER 1984 NURSING GRADUATES ARE HONORED AT RECOGNITION TEA

Forty-seven students from the Edna McConnell Clark School of Nursing were honored on December 3 during a recognition tea at the Riverview Lounge in the Hammer Health Sciences Center.

The class of December 1984 was welcomed by Joan Kney, director of the School of Nursing. Martha E. Haber, vice president for Nursing, greeted the graduates and presented the Nursing Service Award to Bonnie Grillo, of Chester, N.Y.

Ms. Grillo was cited for excellence in clinical performance in Medical/ Surgical, Psychiatric, Pediatric and Obstetrical Nursing. ■

Bonnie Grillo, at left, accepts Nursing Service Award from Martha E. Haber, at right, and Joan Kney, center.

Maryellen Latella

NEW PH PRESIDENT ADDRESSES ALUMNI

Dr. Thomas Q. Morris, second from left, new President of PH, described the Hospital's comprehensive modernization program during the PH Alumni Association's Annual Dinner. From left are: Dr. Donald F. Tapley, Dr. Morris, Dr. Alfred M. Markowitz, association president, Dr. Ralph Schlaeger, Dr. Henrik Bendixen and Dr. Felix E. Demartini.

FOOTNOTES

NEUROLOGICAL SURGERY: **Dr. Donald O. Quest,** associate attending neurological surgeon, has been elected vice president of the Congress of Neurological Surgeons, which has more than 2,500 members worldwide.

REHABILITATION MEDICINE: **Dr. John A. Downey,** director of the Rehabilitation Medicine Service, recently was visiting professor at Dalhousie University and the Nova Scotia Rehabilitation Center, Halifax, Nova Scotia.

Dr. Robert C. Darling, past director of the Rehabilitation Medicine Service, received the Distinguished Clinician Award conferred by the American Academy of Physical Medicine and Rehabilitation for his many contributions to the field, particularly for his work in exercise and fatigue physiology, cystic fibrosis and autonomic regulation.

Dr. Erwin G. Gonzalez, attending physician, recently was elected to the Board of Governors of the American Academy of Physical Medicine and Rehabilitation at the academy's recent convention in Boston.

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STETHOSCOPE

TRACKING DOWN MEDICAL MYSTERIES IN THE LAB

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IMPORTANT NOTICE TO OUR READERS

You are invited to participate in The Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity, unitrust life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information, call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

ABOUT THE COVER

A woodcut of the legendary sleuth Sherlock Holmes.
(The Bettmann Archive, Inc.)

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MEDICAL INVESTIGATORS TRACK DOWN MYSTERIES IN THE LAB

When a hostile organism attacks the body, the result may be anything from an infected hangnail to a case of deadly Acquired Immune Deficiency Syndrome (AIDS).

Because some organisms have symptoms that are easy to identify, they can be diagnosed and destroyed rapidly. But an organism may linger quietly, hiding out in the body for years until it suddenly causes a host of symptoms. Disease also can masquerade itself: Cancer cells can invade normal tissue and give no clues to their presence as they slowly grow uncontrollably through the body, or they may offer such misleading signs as a skin rash.

Like a detective answering the questions surrounding a crime, a medical investigator must sift through and combine all of the clues and evidence available to solve the puzzle.

If a physician suspects that a certain organism or malignancy is causing the problem, he may suggest a laboratory test or a tissue biopsy that will confirm or rule out his diagnosis.

In the emergency room, blood tests of a teen-ager who attempted suicide by downing a large number of pills can help determine the course of treatment in order to prevent liver damage.

In the operating room, after surgeons remove a tiny piece of tissue from a patient, a surgical pathologist whisks away the sample to make an immediate diagnosis that will help determine the course of the surgery — such as how to proceed if malignant cells are present.

In a patient care unit, tests of a patient first thought to have bronchitis pointed to the more elusive bacteria that causes the deadly Legionnaire's disease, thus enabling doctors to institute the proper treatment.

"Physicians couldn't practice state-of-the-art medicine without the laboratories. These medical investigators are essential in helping doctors diagnose disease as well as in monitoring the treatment of patients," says Dr. Thomas A. Blumenfeld, vice president of Medical Affairs at The Presbyterian Hospital.

"Modern technology is changing the practice of medicine. In the past, it took days to obtain the results of many tests," says Dr. Blumenfeld. "Today, rapid methods of reporting the results in the laboratories enable doctors to diagnose disease earlier in order to save more lives and improve the quality of life."

A laboratory technologist in the Chemistry Laboratory selects a tube for a special blood test.

Joel Landau

LIFE BEGINS IN THE LABORATORY AT PH

Dr. Georgiana M. Jagiello, director of the *in vitro* fertilization program.

"The birth of any baby is a miracle. But for us, just having them is a miracle. We had been through about eight years of trying — with a lot of drama and a lot of grief before our twins were born."

— Father of twins born through *in vitro* fertilization at The Presbyterian Hospital on August 25, 1984

When the miracle of conception and reproduction occurs in nature, it seems simple and effortless. But attempts to duplicate this process outside the womb have shown that nature is truly complex.

The recipe for reproduction seems basic enough. It requires a ripe egg and a feisty sperm to fertilize it so that the egg can grow into an embryo.

"Nature doesn't produce an embryo on every attempt to conceive, and neither does our *in vitro* fertilization program. But we have been able to help create life in the laboratory — twins last year and other patients who gave birth to perfectly healthy boys and girls," says Dr. Georgiana M. Jagiello, director of the *in vitro* fertilization program at The Presbyterian Hospital.

THE EGG IS THE CENTERPIECE OF THE *IN VITRO* PROGRAM AT PH

The centerpiece of the program is the egg. "The egg is such a beautiful cell — one whose capabilities are awesome. We know that if all goes well, the egg will become a baby. The sperm doesn't have the same kind of charisma," she says.

Within the egg resides a reservoir of genetic material, the coding information that carries all of the instructions necessary to create the new cells that will make up the embryo. When the egg is ripe, it sits there waiting for the sperm to fertilize it. Even before the egg and sperm join, the genetic material sends instructions before fertilization can take place.

Because the egg needs a place that's warm like a body for fertilization

to occur, the *in vitro* laboratory at PH tricks the egg into believing it's inside the mother. When fertilization takes place in the laboratory, the environment must be nutritionally equivalent to the setting inside the Fallopian tubes.

LAB SIMULATES ENVIRONMENT OF THE MOTHER'S FALLOPIAN TUBES

"We imitate the Fallopian tube environment by carefully regulating the water, oxygen, humidity and such nutrients as amino acids, sugar and carbohydrates within the culture medium and in the incubation chamber," says Dr. Jagiello. "Recreating the environment of the body in the laboratory is part of the mystique.

"The science in the *in vitro* process is very nebulous — it's mostly good judgment applied to a scientific protocol — in other words, catching the egg and the sperm at the right moment and in the right stage," she adds. "We still don't know what a human embryo needs to grow."

After each egg is removed from the woman's ovary, it is washed and examined individually before being placed in the dish. "When we gather the eggs, we look for certain qualities. They should have a certain symmetry — they look like soap bubbles — round, glassy and clear," says Dr. Jagiello.

"Anywhere from one to eight eggs go into the dish. If there are eight good ones, we use them all. Once in the dish, the eggs seem to be busy manufacturing nutrients and energy as they await the sperm," she explains.

Before the fertilization process, doctors place the egg in a liquid culture medium. While the egg waits in the shallow sterile dish, the sperm are collected and then sprinkled atop the egg.

EGG AND SPERM SPEND 16 HOURS IN A CULTURE DISH

The two spend the next 16 hours together in a culture dish. Once the sperm lands on top of the egg, it first dissolves the egg's outer coats. The sperm then fuses with the inner wrapper of the egg.

If fertilization occurs within that time, the dish goes back into the incubator. Within the next 48 hours, the egg should grow into a six- to eight-cell embryo. The embryo then is transferred via catheter back into the mother's uterus.

From the removal of the egg to the embryo transfer, the entire *in vitro* process takes about two days.

SUCCESSFUL FERTILIZATION ENABLES A NATURAL TERM OF PREGNANCY

"The wonder of this procedure is that the couple can enjoy a full nine-month pregnancy. They can experience the entire natural process of reproduction, minus the two days for *in vitro* fertilization," says Dr. Elynne B. Margulis, medical coordinator of the program.

"The mother nurtures the embryo, undergoes labor and delivery and rears her child just as any other mother. Our goal is to do as well as nature — to mold ourselves to a good model which already exists."

Dr. Elynne B. Margulis holds an infant born through *in vitro* fertilization at Presbyterian.

"FRIENDLY" BACTERIA HELP SAVE BABIES' LIVES

When an infant is born, his body remains sterile for the first few days of life. Soon, colonies of protective bacteria begin to populate the body — and a pattern is established which forms a barrier against infection as the infant grows.

"Normal flora, or 'friendly' bacteria, are good to have in various parts of the body. For instance, in the pharynx, many strains of alpha-hemolytic streptococcus bacterium form protective barriers against dangerous microorganisms. But when the balance of flora in the body undergoes even a small change as a result of treatment with antibiotics, a problem can result," says Dr. Katherine Sprunt, co-director of Clinical Microbiology at The Presbyterian Hospital.

If an infant needs antibiotics, the drug therapy can wipe out necessary harmless protective bacteria and increase the child's chances of developing an infection.

"When a newborn has abnormal colonization of a harmful bacterium in the pharynx, it sets the stage for serious infections because the bloodstream can become infected. Meningitis or pneumonia can be the result," says Dr. Sprunt.

"In the Neonatal Intensive Care Unit, where every patient is at high risk because of a low birth weight or other problems, we take throat cultures twice a week and screen each one for abnormal colonization by an excessive number of harmful bacteria. This allows us to detect any babies who are at risk for serious infection and also enables us to spot any signs of infection as early as possible," says Dr. Sprunt.

Dr. Katherine Sprunt places a specially grown strain of a "friendly" bacterium into a solution.

Joel Landau

ROUTINE UMBILICAL CULTURE HELPS TO DETECT TROUBLE BEFORE IT STARTS

Before each healthy baby goes home, doctors take a culture from the umbilicus in order to detect potential trouble before it develops. The laboratory looks only for two bacteria that can cause problems in a nursery setting — group A beta hemolytic streptococci and staphylococcus aureus. "By doing this, we can detect and eliminate the potential for an epidemic of an infection with the hostile streptococcus group A bacterium before we see any clinical outbreak of the disease," she notes.

In the past, when such an outbreak occurred, it took the staff by surprise. By the time sick and infected babies returned to the clinic several days after going home, all the infants in the nursery as well as the staff were heavily colonized by the hostile bacterium and it was difficult to catch up with the source of the epidemic. Often, nurseries had to curtail new admissions to stop the spread of disease.

"We no longer have to do this because the results of the routine culture taken at discharge help us to pinpoint a problem before it causes its first active infection. If the tests show that group A streptococcus is present in the nursery, we notify the mother and take cultures from all the exposed babies. Then we track down the source of the problem and correct it before any signs of disease occur," says Dr. Sprunt.

PRACTICAL USE OF HELPFUL BACTERIUM MOVES FORWARD AT CPMC

After several years of laboratory research at Columbia-Presbyterian Medical Center, Dr. Sprunt now is investigating the practical use of alpha streptococcus to prevent infection in

high-risk infants.

Dr. Sprunt administers a small amount of the bacterium to the abnormally colonized high-risk babies through a feeding tube that directly sends it into the pharynx. Within 24 to 72 hours, the bacterium becomes the predominant organism and the flora becomes "normal."

Before an infant is implanted with the protective bacterial strain, the procedure is reviewed carefully with the parents, who must grant permission for this procedure.

After the "friendly" bacterium finishes its work, it conveniently drops to a low level or disappears.

"To date, no infection has occurred in any of the babies implanted with the strain — either from the strain or from the abnormally colonizing organism," says Dr. Sprunt.

"The special characteristics of this strain of alpha streptococcus made it the natural choice. Among its pluses are its ability to inhibit growth in the laboratory by abnormally colonizing organisms, its built-in genetic markers that enable us to recognize it in tests, and its nice way of adhering to tissue in the pharynx, where it apparently inhibits abnormal colonization," she explains.

This strain of alpha streptococcus can grow in the presence of a very small amount of such antibiotics as penicillin. "It's definitely a great bacterium to have," says Dr. Sprunt.

The concept of using "friendly" bacteria to combat "hostile" bacteria goes back to Louis Pasteur in the 1800s.

Its only previous application has been to combat staphylococcus infections during a worldwide outbreak in the late 1950s and early 1960s.

VERSATILE BACTERIUM OFFERS A WIDE RANGE OF PROTECTION

"Our strain of alpha streptococcus, which we call strain 215, is very general in what it can do. Strain 215 protects the infant's body against different strains of harmful bacteria, giving a wide spectrum of protection," Dr. Sprunt explains.

"We envision that the potential use of strain 215 will be twofold in the future — to protect the individual and to decrease the load of harmful organisms in the environment in the event of an epidemic."

Beneficial bacterial strain is implanted into the nasal pharynx of a premature baby in the Neonatal Intensive Care Unit.

Joel Landau

CPMC RESEARCHERS TRACK DOWN TRICHINELLA IN U.S. PORK SUPPLY

Courtesy National Pork Producers Council

John

To save money, a New York City family bought a pig from an upstate New York farm. The grandmother, who planned to make homemade sausage, tasted the raw pork on the way home. A little more than a month later, she died. The cause: Trichinella spiralis, a parasite that can be passed from pigs to humans in raw or undercooked pork.

Eight customers of a butcher shop in Northern New Jersey got sick after purchasing pork butt, sides of bacon and pork chops from the store. The state epidemiologist learned of the illness and tracked down the trichinosis to the infected pork sold at the butcher shop.

"Sporadic epidemics of trichinosis often occur," says Dr. Dickson Despommier, director of the Parasitology Diagnostic Laboratory at The Presbyterian Hospital. "But it takes a very clever doctor to make a diagnosis of trichinella, because the signs and symptoms are so diffuse."

Of the 90 million pigs in the United States, an indefinite number are infected. The prevalence of the

Above: Pigs in a pigpen. Lower left: Trichinella parasite bores into the intestinal wall. Lower right: Dr. Dickson Despommier collects antigens to diagnose trichinella.

trichinella infection remains unknown because there is no test now being used to detect the parasite before the pig goes to the slaughterhouse. As a result, there is no way to prevent trichinosis other than by thoroughly cooking or freezing the pork.

Dr. Despommier and his team of research parasitologists at Columbia-Presbyterian Medical Center have developed a test which enables the detection of trichinella at the slaughterhouse and at state laboratories which have begun to screen samples from farms. The test has undergone study by the U.S. Department of Agriculture on a large sample of pigs. The U.S.D.A. now is using the test to conduct the first survey for trichinella in pigs throughout the country. It is expected to be put into widespread use within the next several months.

"If a lot of people eat a heavily infected pig, death can occur. That's why it's so important to look for these infections at the source," Dr. Despommier explains. "Unlike cattle, which have brands on their hides to identify their farm of origin, pigs are sold at auction with no identifying marks. This makes it impossible to track them down once they reach the slaughterhouse."

EARLY TRICHINOSIS SYMPTOMS MASQUERADE AS INTESTINAL DISTRESS

One to two weeks after a person ingests the trichinella parasite, nausea, vomiting and diarrhea occur. These symptoms easily can be mistaken for food poisoning or gastroenteritis.

As the organism invades its host's body, the intestinal symptoms disappear, giving way to fever, aching muscles and swelling all over the body.

After a person consumes the trichinella larvae, the parasites move into the walls of the intestine. Within 30 hours, they become adults. As they mate and proliferate, they give birth to newborn larvae which penetrate the bloodstream surrounding the intestine. Then, they invade the entire body.

"In many ways, trichinosis is similar to a virus in its ability to gain control of the infected host cell. In seeking out skeletal muscle cells, it passes through any tissue blocking its path. If it happens to pass through the heart, for instance, it can cause heart failure," says Dr. Despommier.

"How severely the person is affected depends on how many larvae he has consumed, how old he is and how much he weighs," the parasitologist explains. "If he ingests a few hundred larvae, he may become slightly ill. If he takes in 2,000 worms, he may become quite ill. If, say, he has ingested 20,000 worms, he may die."

TRICHINELLA PARASITE TAKES UP RESIDENCE IN MUSCLE CELLS

Once the trichinella parasite enters the body, it takes up permanent residence within the muscle cells. "Even if a person doesn't get sick from the parasite the trichinella never leaves. It stimulates a continued immune response which protects the host and prevents him from becoming sick again," Dr. Despommier explains.

"If the illness is diagnosed early, it can be treated with a drug that will expel the worms from the intestine. Failure to catch it within the first few weeks enables the parasite to migrate to other locations in the body where the drug has no effect."

Doctors, however, can treat symptoms that result from tissue damage caused by inflammation to reduce the swelling and muscle aches that accompany the illness.

Just as with every other living organism, trichinella has antigens, or markers within its cells, which trigger the body's immune response to produce antibodies. Researchers at CPMC are exploring what kind of antigens the parasite produces as it activates the human immune system, which may help to detect the parasite in both the pig and in the human. "We think both pigs and people recognize the same antigen," says Dr. Despommier.

"We hope to learn the exact relationship between the parasite and the host — to ask what makes the parasite dependent on the host for its livelihood. The ultimate question is how can we interfere in this relationship so that just the parasite is affected and not the host," he adds.

"CPMC is one of the few centers worldwide that is investigating the nature of these antigens in trichinosis. We hope to apply our findings to parasites that may be less widespread but just as devastating in the debilitating illnesses they produce both here and throughout the world."

Joel Landau

SURGICAL PATHOLOGIST IS THE "DOCTOR'S DOCTOR" IN THE OPERATING ROOM

Dr. Kathleen O'Toole races from the operating room to a lab with a tissue sample. Inset: Dr. O'Toole makes a diagnosis.

Joel Landau

Many people view the pathologist as someone who performs autopsies in hospital basements and studies the cells of patients' diseased organs in order to discover the cause of death. The television medical examiner "Quincy" helped to popularize the forensic pathologist as a doctor who probes into suspicious deaths and clears the legal record.

These views are accurate, but limited. While the pathologist's domain is the study of disease, most often it is with a view toward restoring health to a living patient.

Pathologists make possible crucial split-second diagnoses in critical patient care situations. Consider this everyday scene at The Presbyterian Hospital:

While a woman lies anesthetized in the operating room, surgeons remove a small piece of tissue from her breast. A doctor, dressed in what appears to be a white spacesuit, enters, takes the tissue and the surgeons pause. In a room adjacent to the operating room, the surgical pathologist prepares the tissue for analysis. When the surgical pathologist returns about 10 minutes later, surgeons will know whether cancer cells have invaded the tissue.

"As we look through the microscope, we examine the tissue's architecture. When a pattern emerges, we look at the tissue cell by cell. The features of malignant cells differ from benign cells — there's more disorganization," says Dr. Kathleen O'Toole, assistant attending pathologist.

"In 90 percent of all cases, we can give a definitive diagnosis, which tells the surgeon how to proceed. Most of the time, we report back to the surgeon within 10 minutes. In the other 10 percent of the cases, when it's difficult to distinguish between a benign growth and a malignancy, we defer the diagnosis until permanent sections have been prepared," says Dr. O'Toole.

"It can be stressful analyzing those cells—but we'd rather give no diagnosis and have the surgeons wait another day than take a chance on giving them the wrong diagnosis," she adds.

Dr. John J. Fenoglio, acting director of the Pathology Service at PH, describes the surgical pathologist as a "doctor's doctor. This physician serves as a consultant to another physician. A surgical pathologist must have a broad-based knowledge of all kinds of disease in order to advise the physicians on the probable course of particular diseases and appropriate treatment."

"The surgical pathologist has a major role in patient care," says Dr. O'Toole. "Our analysis in each case is a determining factor in the care the patient receives — the ultimate diagnosis often rests with us."

HEMATOLOGY RESEARCHERS PROBE A DELICATE BALANCE IN THE BLOOD

As the blood circulates through the arteries and veins in the body, its fluidity must be maintained. If blood flow becomes sluggish or obstructed, the supply of oxygen and nutrients to the tissues is reduced, causing tissue damage. Depending on which vessel is blocked, this may lead to heart attack, stroke or death.

"All the evidence suggests that there is a delicate balance between clot formation and breakdown. If the balance favors clot formation, then excessive clotting may occur. But if clot breakdown is more prevalent, excessive bleeding may result," says Dr. Jeffrey Weitz, assistant attending physician at The Presbyterian Hospital and a member of the Thrombosis Research Laboratory at Columbia-Presbyterian Medical Center.

Using sensitive tests that have been developed at the Medical Center, doctors can better assess the balance between clot formation and breakdown.

"These tests allow us to assess the balance in patients with a bleeding tendency, such as those with acute leukemia, or in patients who have a tendency to develop blood clots in the leg veins, such as those undergoing extensive surgery," says Dr. Weitz. "By performing these tests daily, we can determine the effects of treatment or surgery on this delicate balance and predict what therapy, if any, may be necessary to restore the balance."

CPMC DEVELOPED FIRST TEST TO DETERMINE CLOT FORMATION

Under the direction of the late blood specialist Dr. Hymie L. Nossel, researchers at CPMC originated the first tests which could be used to measure the balance of factors within the blood that influence its fluidity.

Dr. Weitz and the thrombosis study group since have created new tests that focus on clot breakdown. "When a substance present in the blood is activated, it can digest blood clots. Enzymes in the white blood cells also may participate in this clot breakdown. The action of cells in clot breakdown is an area which we just are beginning to explore," says Dr. Weitz.

Researchers at the Medical Center are investigating the role of some of these substances in a variety of diseases. For instance, when cardiologists give these agents — such as streptokinase and tissue plasminogen activator — to heart attack patients, they can digest the clot in the arteries of the heart — thus restoring blood flow and salvaging endangered heart muscle.

THE CAUSE OF CLOT FORMATION STILL ELUDES RESEARCHERS

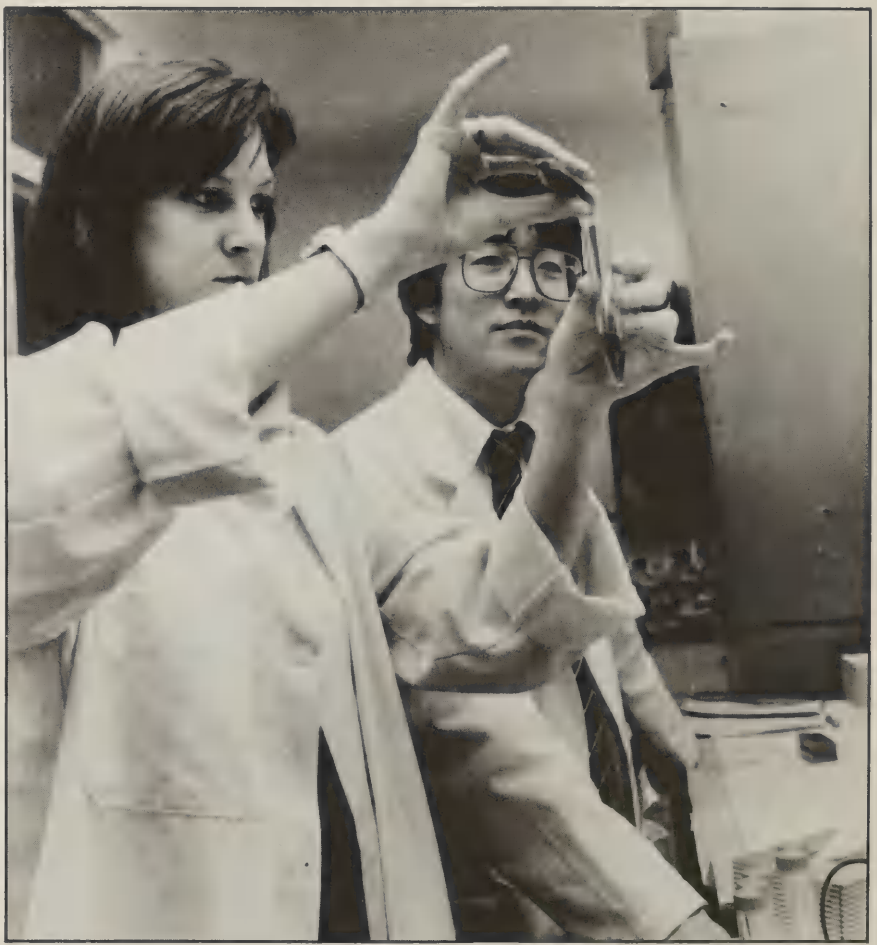
Doctors still don't know what leads to clot formation in the blood vessels. In the laboratory, researchers are investigating the role of the blood vessel in regulating blood fluidity.

Cardiologists can use the blood tests reflecting clot formation and breakdown to monitor the effects of different clot-digesting drugs given to patients with heart attacks.

"We already have a test to determine whether the drug is just attacking the clot without destroying essential proteins in the blood," says Dr. Weitz. "We are trying to develop a blood test that reflects how well these drugs work. These tests then can be used to assess new clot-digesting agents both in the test tube and in the patient."

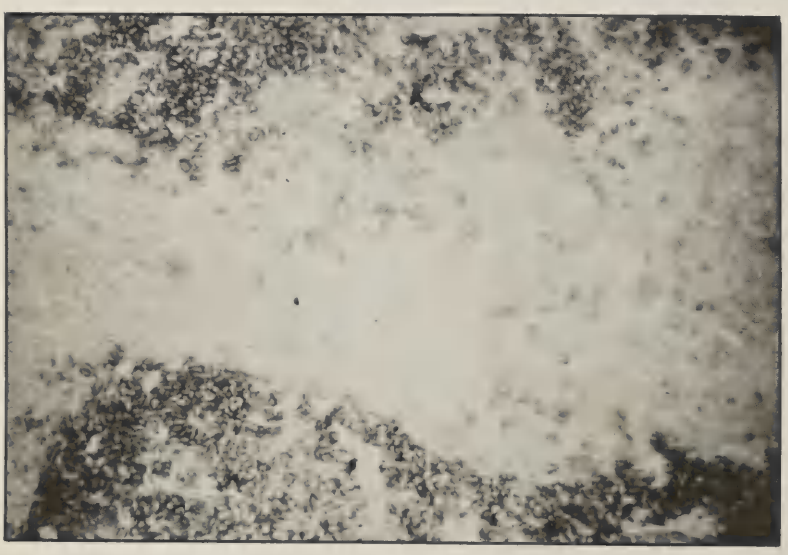
In the Cardiac Intensive Care Unit, Christine Carthy, R.N., and Dr. Neil Greenspan discuss lab results in a patient with a tendency to develop blood clots in the leg veins.

WHEN A DIAGNOSIS IS DIFFICULT, LAB TESTS MAKE A CRUCIAL DIFFERENCE



Joel Landau

Dr. John H.S. Chow and Joanne Edington, research technician, prepare to analyze white blood cells. Below: A section of skin from a patient with a T-cell malignancy. The black circles are abnormal cells stained by monoclonal antibodies.



Three patients who recently were treated at The Presbyterian Hospital perplexed their doctors. Although relatively free of symptoms, each patient unknowingly harbored a potentially lethal disease.

A 52-year-old librarian felt good except for persistent patches of itchy, red and scaly skin.

A young professional man in his 30s appeared healthy, but complained of swollen lymph nodes all over his body.

A 40-year-old homemaker who previously had lymphoma generally felt good despite mild headaches and backaches.

"Frequently, we deal with patients in whom a definite diagnosis is difficult. It's almost impossible by clinical parameters to connect the seemingly mild symptoms these three patients had and the underlying disease," says Carole L. Berger, Ph.D., director of the

Immunology-Phenotyping Service.

Using a laboratory test developed by researchers at Columbia-Presbyterian Medical Center, Dr. Berger was able to detect the abnormal markers which signaled the presence of disease in each of the patients. The diagnoses of the patients without symptoms were: Cutaneous T-cell Lymphoma (CTCL) in the librarian, B-cell lymphoma in the homemaker and Acquired Immune Deficiency Syndrome (AIDS) in the young professional.

"The woman whose skin flared up easily could have gone on for several years with a benign form of the disease, or if it were a more aggressive form, her life expectancy might have been about three years. If we hadn't done these tests, the patient would have been treated for some time for a skin rash instead of a malignancy of the lymph system," says Dr. Berger.

"In this disease, it's a question of whether this malignancy has spread beyond the skin. As the cancer progresses, the number of malignant T-cells in the skin increases and soon begins to invade the bloodstream and organs. If the disease spreads to the blood and lymph nodes, then the patient can be treated with chemotherapy."

The test enables clinicians to detect a small number of malignant cells in the midst of the normal blood cells in the leukemic phase of this disease.

Researchers know of a few major groups of T-cells, specific types of lymphocytes, or white blood cells. Helper T-cells send messages to B-cells to make antibodies to fight disease. Suppressor T-cells signal the immune system to stop destroying invaders. Killer T-cells destroy cancer cells and virus-infected cells.

In the lab, Dr. Berger looks at blood samples to see if there is any change in one of these groups of T-cells. While lymphoma patients show an increase in one set of abnormal T-cells, AIDS patients have a T-cell depletion.

"In AIDS patients, helper T-cells are lacking. As the number of these T-cells declines, the body's ability to fight infection dwindles and eventually disappears," says Dr. Berger.

"We were able to diagnose the AIDS patient because the test showed that he had abnormal antigens, or surface markers on his white blood cells in the lymph nodes and the node also contained a malignancy typical of AIDS, even though his skin showed no signs of this disease that is typical in AIDS. In this man's case, we were able to make a definitive diagnosis — it's not as clear in all cases."

Joel Landau

Dr. Carole L. Berger in her laboratory.

The test that Dr. Berger uses is one of the first available that is useful in diagnosing patients with AIDS. The test was developed by Dr. Berger and CPMC researchers and was tested clinically at the New York University Medical Center.

The test was positive in a group of 37 patients from NYU who were suspected of having AIDS. Negative test results appeared in healthy homosexuals, even those who had other infections usually connected to AIDS.

Dr. Berger uses monoclonal antibodies in diagnosing lymphomas, leukemia and AIDS. Each antibody carries a fluorescent dye on its surface. When it reaches T-cells associated with its intended target, it attaches to an abnormal marker on the malignant cell.

"This marker is specific for abnormal white blood cells in leukemia, lymphoma and in 46 percent of all AIDS patients," she says.

"In some cases, the markers point to an abnormality on the first test. In others, the presence of an abnormality is not as clear, so we make additional tests," says the immunologist. "Occasionally, we look at the tissue directly under the microscope to ensure that we make a correct diagnosis."

TEST ENABLES VIEW OF T-CELL ABNORMALITY

Dr. Berger says that the test for AIDS seems to work because "of the way it detects a decrease in the helper T-cells. If AIDS has progressed to its later stages, this set of helper T-cells gets totally wiped out and disappears."

As researchers began to seek the cause of AIDS, they first looked for a microbe, then a parasite, and eventually cultured a virus identified as HLTV, which is believed to cause the disease. However, as the virus grows, the affected cells burst and destroy themselves, preventing the virus from continuing its growth — which makes it difficult for scientists to create a vaccine for it.

"AIDS is a major research puzzle that still is without a satisfactory answer," says Dr. Berger. "As we search for clues, we are asking: Why is it evolving now? Why does it attack a particular T-cell subset? Why does it affect certain groups of patients, such as homosexuals and heroin users? Researchers, clinical investigators and epidemiologists are coming together to review all the pieces of the puzzle and ask how they fit into the picture."

LAB TEACHES THE IMMUNE SYSTEM TO ACCEPT A TISSUE TRANSPLANT

Because the body's immune system is so receptive to new information, doctors at The Presbyterian Hospital are working to educate the immune response of transplant patients to enable them to accept new organs with less chance of rejection.

When a patient receives an organ transplant, his immune system naturally rejects it as foreign tissue. Until now, there has been only one way to get a patient to accept the new kidney or heart as his own. Doctors had to treat the body with drugs that suppress the immune system's response to fight off the foreign tissue.

As researchers at Columbia-Presbyterian Medical Center pondered why rejection occurs, they looked at a reaction that takes place during the normal course of pregnancy and learned a lesson from the immune system.

"Under normal circumstances, a pregnant woman develops antibodies, or protectors, against the fetus. At first, her body's immune system sees the fetus as foreign tissue. But this initial reaction triggers a second response which allows her to tolerate the fetus. The second group of antibodies actually halts the production of the first group which otherwise would destroy the fetus," says Dr. Nicole Suciu-Foca, director of the Immunogenetics Laboratory at CPMC.

The new fetus bears the antigens, or genetic markers, of both the father and the mother, reports Dr. Suciu-Foca. Antigens are present on all cells in the body. In the fetus, half of these markers come from the father, and the other half come from the mother. The paternal markers signal the mother's body to create antibodies and thus protect her body.

"But nature built in a mechanism that enables the mother to create another set of antibodies which protect the fetus by blocking the antibodies which react with the paternal antigens. This chain reaction suppresses the body's natural inclination to destroy the foreign tissue, in this case, the fetus," says Dr. Suciu-Foca.

The Immunogenetics Laboratory team is studying an induced immune mechanism based upon its knowledge of the immune response during pregnancy, that allows a patient to accept a donor organ.

It long has been known that each time a potential kidney recipient receives a blood transfusion while undergoing dialysis treatment, his production of antibodies changes. The more antibodies a patient produces, the more difficult it becomes to find a donor organ that is compatible.

For the last several years, it only was known that a patient would react against the antigens, or foreign substances, of a new organ.

The laboratory's discovery that emphasizes education of the immune system has made transplants possible for patients who were awaiting a new organ for years, yet saw their chances decrease because they produced antibodies against most potential donors.

"A large number of patients have been denied transplants because of their antibody production, which would destroy a new organ. This laboratory has found that once such antibodies are formed, a second generation of anti-anti-antibodies develops and that this newly formed group protects rather than destroys the new organ," says Dr. Suciu-Foca.

By manipulating the immune response to mimic what happens in pregnancy — or stop its reaction to a specific foreign substance, such as a new organ — Dr. Suciu-Foca is working to educate the body's immune response.

TRANSPLANT PATIENTS' IMMUNE SYSTEMS CAN BE TAUGHT TO IGNORE ANTIGENS

"For people in need of transplants, this means that the immune system can be taught to ignore a certain antigen, or foreign substance — the donor organ — while still responding to everything else, mainly the bacteria and viruses in the environment," she explains. "This way, the body can protect itself."

"As a result, some patients with little chance of getting a transplant can become acceptable candidates. Also, donor organs will not be wasted because they cannot be matched with patients who need them. This is all possible because the patients' new antibodies block their own response against the unrelated donor tissue."

At left: Aurica Foca-Rodi, lab technician, places cells in a tray to match a potential donor with a transplant recipient. Center: Dr. Nicole Suciu-Foca. At right: Surgeons complete a kidney transplant.

NEWSBRIEFS

SURVEY LISTS PH AS ONE OF THE BEST HOSPITALS IN THE NATION

The Presbyterian Hospital was named one of the best in the country in a recent Good Housekeeping magazine survey of 250 medical administrators from across the United States.

The Hospital was cited for all-around excellence as a general hospital.

The magazine asked the medical directors, chiefs of staff, department chairmen and hospital presidents at major medical centers: Which hospitals — other than their own — did they consider most outstanding in terms of patient care?

Of the hundreds of hospitals named, 14 medical centers repeatedly were mentioned under the general hospital category. ■

NURSING ACHIEVEMENTS ARE HONORED

Dr. Ida Martinson, professor and chair, Department of Family Health Care Nursing, School of Nursing, University of California, San Francisco, recently lectured on the "Impact of Childhood Cancer on the Child and Family" at PH. Following her lecture, she was honored for her achievements in nursing. From left are: Rosa Williams, Dr. Martinson, Mary Ann West, Martha E. Haber, vice president for Nursing, Patricia Wrobbel, Marianne Burgunder, Mary Walsh, Pat Taeschler, Linda Hurwitz (standing) and Penny Buschman.

FOOTNOTES

DERMATOLOGY: **Jeannette E. Anders**, R.N., participated in a special briefing at the White House as a member of the board of directors of the Dermatology Nurses Association.

NURSING: **Susan Bowar-Ferres,** Associate Director of Nursing, Neurology-Orthopedic Nursing Service, recently participated in creating an award-winning film on Parkinson's disease entitled "Moment to Moment —Living With Parkinson's Disease." The film earned a silver medal at the International Film and Television Festival of New York, in which there were 5,000 entrants.

OPHTHALMOLOGY: **Dr. Francis A. L'Esperance,** associate attending ophthalmologist, was guest lecturer at a laser congress sponsored by the University of Milan in Italy. He also served as co-chairman of a two-day symposium on the Renal-Retinal Syndrome in New York, sponsored by the Downstate Medical Center.

SURGERY: **Dr. Ivo P. Janecka,** associate attending plastic surgeon, presented a paper on "Regeneration of the Peripheral Nerve, An Experimental Study," at the Fifth International Symposium on the Facial Nerve in Bordeaux, France.

IN MEMORIAM

DR. GILBERT J. VOSBURGH

Dr. Gilbert J. Vosburgh, retired associate attending obstetrician and gynecologist at The Presbyterian Hospital, died on February 2.

Dr. Vosburgh served on the Hospital staff from 1955 until his retirement in 1983. He also was associate professor of clinical obstetrics and gynecology at the Columbia University College of Physicians & Surgeons.

He received his A.B. degree from Princeton University in 1938 and his M.D. degree from Johns Hopkins University in 1942. Dr. Vosburgh served his internship and residency at Johns Hopkins Hospital.

During the Korean conflict, Dr. Vosburgh served as a major with the U.S. Marine Corps.

Dr. Vosburgh was a member of the Society for Gynecologic Investigation, the New York Academy of Sciences, the American College of Obstetricians and Gynecologists and the New York Obstetrical Society.

Dr. Vosburgh is survived by his wife, Barbara, a son, a daughter, a brother, a sister and two grandchildren. ■

DR. IRVING J. NAIDORF

Dr. Irving J. Naidorf, attending dentist at The Presbyterian Hospital and chairman of the Division of Endodontics at the Columbia University School of Dental and Oral Surgery, died on December 3, 1984.

Dr. Naidorf earned his bachelor of arts degree from New York University in 1937. He received his D.D.S. from Columbia in 1941.

During World War II, Dr. Naidorf was decorated for his service during the American Campaign and the European-African-Middle Eastern Campaign.

Dr. Naidorf was assistant dean for Postgraduate Education at SDOS. He was editor of the Journal of Endodontics and a Diplomate of the American Board of Endodontics. He was a former director and president of the American Board of Endodontics.

Dr. Naidorf is survived by his wife, Blanche, and by one son. ■

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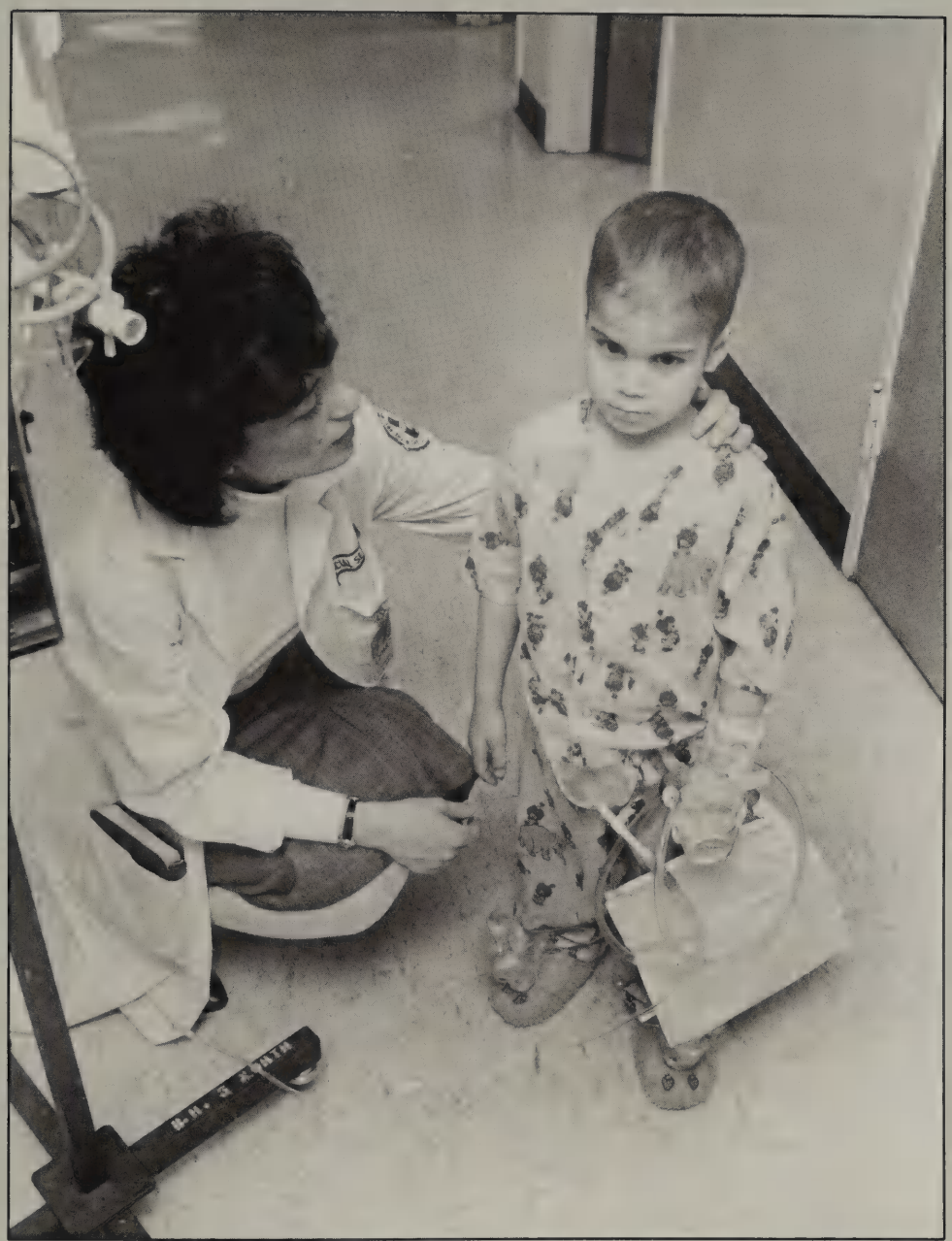

BABIES HOSPITAL: NEW HOPE FOR NEW LIVES **MAY 1985**

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IMPORTANT NOTICE TO OUR READERS

You are invited to participate in The Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity, unitrust life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information, call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

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ABOUT THE COVER

Social worker Naomi Schrenzel chats with 3-year-old pediatric oncology patient Marilyn Serrano of Long Island during a walk down a corridor of Babies Hospital. Photo by Joel Landau.

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BABIES HOSPITAL OFFERS NEW HOPE FOR NEW LIVES

Joel Landau

Janet Stickle, R.N., prepares an infant to leave his isolette in the Neonatal Intensive Care Unit for the first time since his birth.

Some families who bring their children to Babies Hospital are practically bereft of hope.

A 4-year-old whose heart barely can pump blood through his body will die unless he receives a heart transplant.

A family that lost an infant to Sudden Infant Death Syndrome (SIDS) wonders in fear: Will their next child escape this mysterious disease?

A young mother and father whose newborn needed emergency surgery at birth and then developed life-threatening respiratory problems heard the dread words at another hospital: Nothing can be done here for your child.

A mother who constantly strikes her son for asking questions that make her feel uncomfortable sees her relationship with her child deteriorate in a pattern of abuse.

All of these parents lived in despair until they finally brought their children to Babies Hospital, a division of The Presbyterian Hospital. Instead of hearing only words of discouragement, they found that they had another chance.

For many of them, the high drama of bringing a sick or dying child here for treatment is followed by quiet thankfulness and the joy of beginning life anew as the child recovers.

5-YEAR-OLD HEART RECIPIENT HAS A MIRACULOUS RECOVERY

For the Lovette family of Denver, for instance, it's been almost a year since 5-year-old J.P. Lovette received a new heart — the first to survive more than a few hours. He once hovered on the brink of death. Today, he is a vibrant youngster whose recovery has been excellent.

Other families who come here also have success stories to tell. Some of them have children who were born with serious heart defects.

The Division of Cardiology at Babies Hospital has been a leader in the diagnosis and treatment of heart defects in children for several decades. Achievements by cardiac surgeons here have led to the development of innovative techniques to repair many heart defects in children. *(continued on next page)*

BABIES HOSPITAL IS A MAJOR REFERRAL CENTER FOR COMPLEX PROBLEMS

Babies Hospital is a major referral center for numerous complex problems from pulmonary disorders to rare diseases.

Newborn infants who are premature or who are in distress are placed in the Neonatal Intensive Care Unit. Very low-birth-weight babies stay in this unit for months under the close management of the staff who monitors the infants' moment-to-moment changes and respond appropriately.

Each year, the Regional Perinatal Network transports hundreds of high-risk premature infants to the Hospital in mobile intensive care units and by helicopter to take advantage of the specialists and equipment available at the Hospital. The network serves the New York, New Jersey and Connecticut area.

Treatment of childhood cancer at the "day hospital" as well as at the in-patient units here has yielded promising results. For some types of childhood leukemia, the cure rate is almost 100 percent.

Scientists within the various divisions of the Department of Pediatrics at the Columbia University College of Physicians & Surgeons are seeking clues that will help them understand a range of conditions from sickle cell anemia and kidney disease to nutritional problems, genetic defects, brain tumors and disorders that impede normal movement.

CENTURY-OLD COMMITMENT TO CARE AND RESEARCH

"We have a century-old commitment to care and research," says Dr. Michael Katz, director of the Pediatric Service.

"We are in an unusual position of providing excellent primary care to a large community, while at the same time maintaining one of the major tertiary care hospitals in this country. This juxtaposition of basic pediatrics with the most technologically advanced care of the rare complex diseases is our hallmark," says Dr. Katz, who also is chairman of the Department of Pediatrics at the Columbia University College of Physicians & Surgeons.

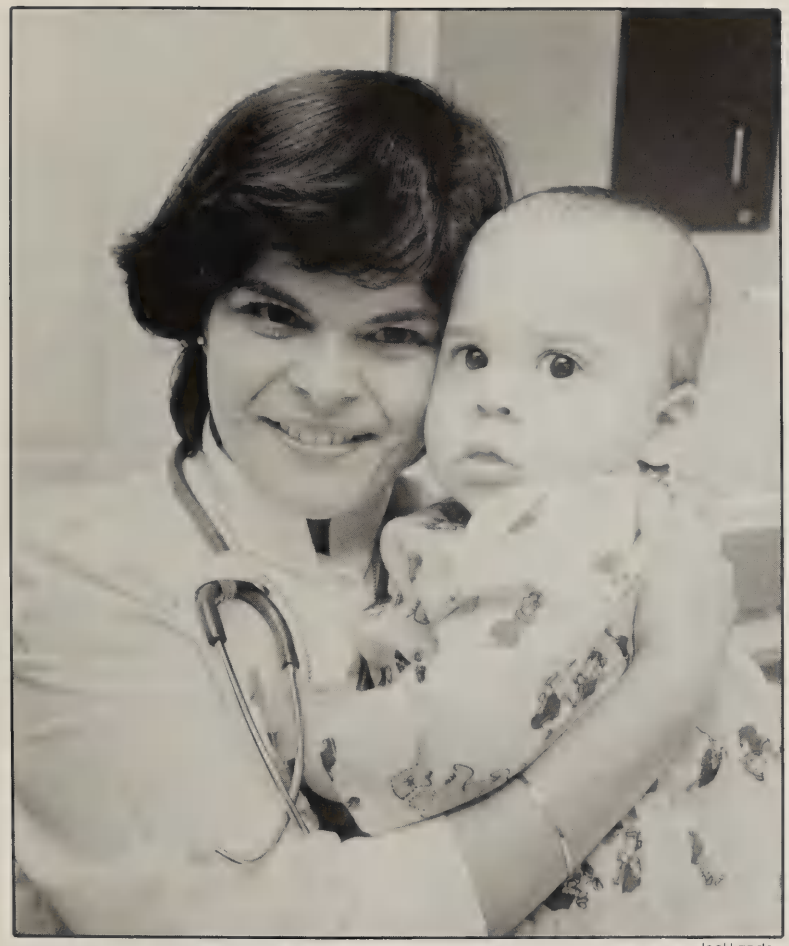
"Because of this," he adds, "we can train young physicians in all aspects of pediatrics and we can conduct research that places us in the forefront of outstanding pediatric institutions."

J. P. Lovette, of Denver, one year after a heart transplant.

Dr. Michael Katz, director of the Pediatric Service.

Rene Perez

PEDIATRIC NURSES COMBINE CARE AND CARING FOR THEIR YOUNG PATIENTS



Joel Landau

When a child first walks into the Pediatric Intensive Care Unit (PICU), he hears many space age sounds that can frighten him. A respirator whooshes as it rises and falls with each breath and a cardiac monitor constantly beeps.

"As a child gets a tour of the unit where he'll be recovering after surgery, he often is filled with fear. The nurses let each child know before he is scheduled to arrive here that a nurse will be at his side all of the time," says Judy Douglas, assistant head nurse of the PICU at the Babies Hospital division of The Presbyterian Hospital.

"There's not a detail that goes unobserved. Minute-by-minute nursing observation is paramount to each child's care," she explains.

The nursing team ministers not only to children, but also to their families. "The parents of our young patients usually are so anxiety-ridden. We make sure the family is not alone. Part of our commitment in caring is providing emotional support to the families, too," says Ms. Douglas. "Our reward is seeing our patients return to a unit to recover and to have the child come up and say 'Goodbye! I'm going home!' "

Jacqueline Torres, assistant head nurse on the cardiology and older children unit, says, "It's difficult for a parent to see a child go from an intensive care unit where he has one nurse round-the-clock to a floor where his nurse also has other patients."

PARENTS BUNK IN AND PARTICIPATE IN THEIR CHILD'S CARE

Many parents stay overnight with their children on patient care floors at Babies Hospital.

"We encourage rooming in — the parents get more involved in their child's care and learn more about caring for the child when it's time for him to go home," says Ms. Torres.

"Parents are hesitant at first," she explains. "So, the nurse puts the child in the parent's arms and says 'it's OK.' Soon, the parents feel confident about such things as bathing the child. As they get more involved in the child's care, we gradually teach them everything they'll need to know by the day the child is discharged."

Above: Jacqueline Torres, R.N., holds 11-month-old asthma patient Christopher Santana. Below: One-year-old Shavonne Clark and her mother get a hand from Judy Douglas, R.N.

THERAPEUTIC NURSERY TEAM BREAKS THE CYCLE OF VIOLENCE IN CHILD ABUSE

Joel Landau

Foster grandmother Arline Jerome tells a story to a youngster at the Therapeutic Nursery.

The injuries may be different — one child comes to the hospital with burns, and others show up with unexplained bruises, cuts and broken bones — but the cause is the same: child abuse.

Doctors and nurses can treat the child for his injuries, yet in many cases the child will suffer similar injuries again. The parent, feeling guilty and ashamed, begins taking the injured child to a different hospital emergency room for treatment after each incident to avoid being recognized as a repeat visitor.

This cycle of violence repeats itself until the child is old enough to leave home. Unfortunately, this previously abused young adult is most likely doomed to inflict the same kind of abuse on his or her own children.

At Babies Hospital, a division of The Presbyterian Hospital at Columbia-Presbyterian Medical Center, two programs minister to abused and neglected children and their families. The Therapeutic Nursery serves infants, toddlers and pre-school children and the Family Center handles older children who have been maltreated.

DOCTORS TRY TO BREAK THE CYCLE OF VIOLENCE IN A FAMILY

"We try to stop the cycle of violence from one generation to the next. But first, we must help the parents recognize this cycle themselves," says psychiatrist Dr. Arthur H. Green, clinical director of both programs.

For instance, if a woman's parents constantly belittled her as a child, that woman will belittle her child and engender a poor self-image in him, says Dr. Green. If another was battered, then very likely, she'll hit her child.

"Before a mother can be emotionally available to her children, she must build her own self-esteem," says Dr. Green. "The program offers support and nurturance to parents. Only when a mother feels that her basic emotional needs are satisfied can she take her children's needs seriously."

"We look at what each parent brings to the relationship. For instance, is the mother depressed and slow to respond to the child? Or are her expectations too high — is she quick to anger and to strike the child if he does something wrong?" says Wendy Kamaiko, head teacher/coordinator of the Therapeutic Nursery.

The staff works together to help parents identify that element of the child's behavior that triggers their actions so that they can recognize and anticipate their own pattern or reaction and replace it with a new approach.

Part of the treatment is giving parents alternative ways to care for their children. "We appeal to that part of the parent that wants to protect the child," says Ms. Kamaiko.

PARENTS CAN CALL 24-HOUR HOT LINE WHEN THEY NEED HELP

As parents begin to learn a new repertoire of how to act in situations with their children, they find that they are not alone when they are having a hard time.

A 24-hour Hot Line is available to program participants who need to talk to someone. "There's often a feeling of isolation with these parents," says Ms. Kamaiko. "We try to help parents anticipate when they will have a hard weekend. Then we remind them that the Hot Line is available.

"No parents want to abuse their own children, but they are unable to control their anger. They feel victimized by the child. So, we tell them — when you feel you're beginning to lose your cool — call the Hot Line!"

The program here aims to give the parent a more realistic perception of the child by working on their relationship as well as by treating the parent

and child as individuals.

"As a parent goes through the program, he or she comes to see the child transformed from a burden into a being with a capacity for warmth and love — something that can bring a lot of pleasure to the mother and father," explains Dr. Green.

Treatment begins by helping the child medically and by providing a nurturing environment for the parent.

INFORMAL FAMILY SETTING HELPS RELIEVE PARENTAL ANXIETIES

When parents first walk in the door as participants of either program, they enter an informal waiting area that resembles, and is known as, the "family room." A "foster grandparent" is always present to greet them and make them feel comfortable.

The grandparents are part of a national program that places senior citizens in an environment where they can comfort and assist children. In the Therapeutic Nursery, they "parent the parents" and create a sense of family and stability.

The foster grandparents are just one part of a staff that offers care and caring in a friendly, supportive way. The team includes child care specialists, psychologists, educators, psychiatric nurses and social workers.

FOCUS IS ON HELPING FAMILIES, NOT ON DETECTIVE WORK

"When a new case comes in, we don't get hung up on detective work and blame," says Dr. Nicholas Cunningham, director of the Division of General Pediatrics and of the Therapeutic Nursery.

He recounts an incident in which a young mother whose child suffered burns of the feet brought the boy to the emergency room at Presbyterian. Shortly after the youth was admitted for treatment, his mother became depressed and entered therapy at the Therapeutic Nursery.

"We never found out how the burns occurred, but we didn't need to," says Dr. Cunningham.

"When we get a case like this, we'd like to understand as much as possible about the situation so that we can provide help and support to the parent. But we're not detectives . . . the important thing is that the mother needs help and we're able to provide it," he adds.

FRIENDLY, SUPPORTIVE SETTING APPEALED TO FRIGHTENED MOM

While this mother's child was hospitalized, she visited the Therapeutic Nursery and saw it as a friendly, supportive place. "Like many other mothers, she saw that the emphasis was on help, so she came back and joined the other mothers in the program," he says.

"Some children are admitted for medical reasons. Others come to the program for social reasons. This includes small children who have been left alone unsupervised for a period of time, children who live in a chaotic home and suffer repeated accidents and children with serious diseases who start missing their appointments," says Dr. Cunningham.

"When the support system around a parent is minimal, that person is most likely to take out his anger or bad feelings on the people around him. Children are the most vulnerable."

MOTHERS AND CHILDREN BEGIN TO BLOSSOM AFTER JOINING PROGRAM

Soon after joining the program at the Hospital, many of these mothers and their children blossom, says Dr. Cunningham. "Those children who were in a shell start to come out of it. Those who were aggressive become softer. They begin to smile as they start to feel better about themselves as human beings," he adds.

Much can be done for families in which there is child abuse and maltreatment by helping the parents and children rebuild their self-esteem. Yet, prevention is the best way to handle the problem.

"The destructive impact of child abuse lingers long after the physical scars and injuries have healed," says Dr. Green.

"The inner world of these children is a turbulent one. We'd like to change it from turmoil to a feeling of peace, but we only can do this by preventing the perpetuation of child abuse from one generation to the next."

RELATIONSHIP BEGINS ANEW FOR MOM AND HER SON

Maria used to feel jumpy and pressured when her 5-year-old son, Luis, (not their real names), started asking questions about his father. "I would tell Luis to go away. I didn't mean to be rude and cold to him, but I felt that by doing this, he'd stop asking questions. But the questions only got bigger in his mind."

As the questions and the doubts loomed larger, Luis began having problems in school. He was hyperactive at home, and he wouldn't listen to his mother. Shortly afterward, he started a fire in the kitchen trash can. "When Luis talked back to me, it bothered me. I screamed at him and hit him when something was wrong."

Since joining the program at the Family Center, Maria and her son, who live in Washington Heights, have developed an open, loving relationship.

When there's a problem, mother and son talk it out. "I feel better now that I can express how I feel — it takes a big weight off my mind. It's easier for Luis to say what he's feeling, too."

MOTHER BEAMS AS SHE TALKS ABOUT HER SON

While Luis played with an emergency rescue play truck, his mother beamed as she described her son: "He's a sweet boy . . . a loving kid. He helps me around the house, he's polite and he's bright in school."

When a birthday or holiday comes up, Luis makes a card for his mother containing a poem of his own creation.

After joining the program, Maria met other parents and one of them has become her best friend.

"We're more like sisters," Maria explains. Whenever I'm down, she helps me. And I help her when she needs it.

"I feel so much better about myself. When I joined the program, I weighed over 300 pounds and felt depressed and not wanted in this world. Since then, I lost 125 pounds," she says.

"After I started coming here, I realized I had the most precious gift from God — my son. I discovered that life is beautiful and worth living."■

SIDS: STRANGE DISEASE KILLS INFANTS AS THEY SLEEP

Joel Landau

Above: Mr. and Mrs. Marvin Bakalar pause in the Hospital garden with their infant daughter, Chloe, and son Jeremy. Below: Chloe and her monitor.

When an infant is born, doctors look for any signs that might point to an increased risk of disease. In most cases, the infant is fine. Occasionally, there is an indication of a problem and then the infant is assessed through special tests, such as an electrocardiogram or an X-ray. In Sudden Infant Death Syndrome (SIDS), there is no way of telling that a newborn is at risk — the baby just dies.

SIDS, one of the leading killers of infants in the United States, claims nearly 10,000 lives a year. The only certainty about SIDS is that it most commonly strikes its tiny victims between two and four months of age.

"We don't know what leads to their deaths, so it's hard to design a test or a monitor to alert the parents before the infant dies," says Dr. Gabriel G. Haddad, a pediatrician at Babies Hospital, a division of The Presbyterian Hospital at Columbia-Presbyterian Medical Center.

"These deaths are unexpected. When the baby is examined, the pediatrician finds nothing that would alert him to any abnormalities," he adds. "But that doesn't mean there's nothing wrong generically with these infants — it could be related to how the heart functions or how the brain interacts with the lungs or to the way the body uses energy at a time of stress."

PARENTS REPORT: "THE BABY LOOKED FINE JUST BEFORE HE DIED"

Every time SIDS claims another infant's life, the parent's report is similar. The baby had just been fed and put to sleep. When the mother returned one-half hour or an hour later to check on the baby, she found the infant blue, cold and lifeless.

Joel Landau

Business executive Marvin Bakalar and his wife, Bianca, were on the final leg of a flight to Paris when the plane began its first descent. Mr. Bakalar, who had been dozing off, reached down to change his son Sebastian.

"When I picked up the baby, I realized something was wrong. Half of the baby's face looked fine. The other half of the face had turned blue. My wife screamed. I grabbed the baby and shook him to get him breathing again. The stewardesses administered oxygen. A doctor on board tried cardiopulmonary resuscitation — but there was no response."

The tragic loss of their first child on December 23, 1981 was a shock to the Bakalars. Sebastian died two days before he would have turned two months old.

SIDS LEAVES PARENTS FEELING HELPLESS AND WITHOUT ANSWERS

His parents had brought him to the pediatrician the day before. "Sebastian was growing perfectly. There was no indication of any problem — he just had a slight cold," says Mr. Bakalar.

"We felt helpless when our son died — especially because we didn't know why he died."

After SIDS claimed Sebastian's life, the Bakalars were afraid to have another child. Since then, they have begun to build a family. Their second child, Jeremy, recently celebrated his second birthday. Their infant daughter, Chloe, was born on March 14.

Pediatric cardiologist Dr. Ehud Krongrad says that although certain epidemiologic data point to a general category of infants who are more likely to have SIDS, "at the moment, there is no good clinical profile of an infant who is at high risk."

HOW A MONITOR AFFECTED THE FAMILY OF A SIDS INFANT

Although there are monitors that can be attached to an infant, there is no definite criteria for their use.

The Bakalars had a monitor for Jeremy and now have one for their daughter. "It's not easy to live with a monitor," says Mr. Bakalar, who explains that the constant contact of the leads from the monitor are uncomfortable for the child and leave sores. "One day I got fed up with the monitor and, in my frustration, picked it up and threw it against the wall. I was sick of having it hurt my child."

Since that first experience, the Bakalars say they have learned some lessons about living with a monitor. "We keep a constant eye on Chloe. We check her chest and her heart beat all the time and only use the monitor at night."

MANY CONTRADICTIONS, FEW CLUES AS RESEARCHERS PROBE SIDS

In his study of SIDS, Dr. Haddad, also an associate professor of pediatrics at Columbia University's College of Physicians & Surgeons, is pondering the next step in research to pinpoint its cause: "There are a lot of contradictions in SIDS research. This makes studies in this area even more difficult."

Dr. Haddad is exploring the mechanisms that preserve, protect and maintain life in infants. "When the system of a mature adult is challenged by some kind of stress, such as an infection, certain mechanisms are activated to fight the new situation. Babies must have such protective mechanisms, but theirs may not be as well developed and, thus, may not respond to stresses as well," he notes.

SCIENTISTS HERE QUESTION RESPONSE TO LOW BLOOD OXYGEN LEVELS

For instance, scientists don't know how an infant responds to the stress of a low oxygen level in the bloodstream, explains Dr. Haddad.

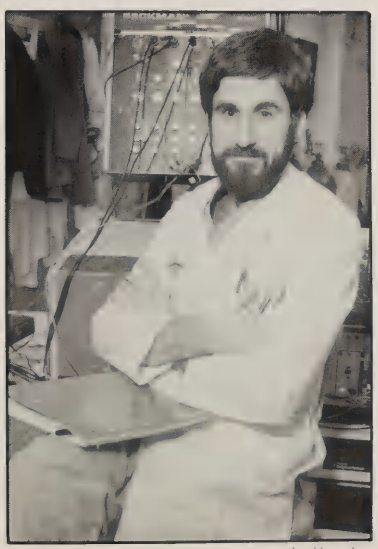
"A low oxygen level in the blood can affect respiration and cardiac function. When an adult is faced with this situation, as can happen when breathing momentarily stops during sleep, major changes can occur in heart rate, cardiac output and, possibly, the flow of blood to major organs. The body responds in such a way to minimize the effect of the change in blood oxygenation. In our studies here, we're asking how an infant responds to these assaults on the system. Possibly, in normal infants, if one mechanism fails, another protective mechanism takes over," Dr. Haddad surmises.

"If we can understand how a baby matures in the first few months of life, and what protects the child, we hope to be able to understand how a baby succumbs to SIDS," he adds. "We're asking how to detect and recognize a baby at high risk. The second question is: 'If we can recognize the baby, can we then prevent SIDS?' "

RESEARCHERS PROBE THE EFFECT OF SLEEP IN INFANTS

As Dr. Haddad, who also is director of the Pediatric Sleep Physiology Laboratory here, observes the interaction between the heart, lungs and brain in infants, he questions the effect of sleep.

"Presumably, SIDS babies die during sleep, a state that modifies most of the functions of the heart and lungs. It appears that sleep can be stressful on the systems of these babies. We feel that research now under way at CPMC will have an important role in defining the mechanisms that protect life in the young and also will help to guide us to early recognition and diagnosis of the infant who might have SIDS."■



Joel Landau

Dr. Gabriel Haddad: Seeking the answers to SIDS.

CHILDREN LEARN TO CONTROL PAIN THROUGH SELF-HYPNOSIS

The 7-year-old boy sits at his desk in school during a math lesson and feels an ache in his arm. Within a short time, the pain will be so severe that he may not be able to function, much less learn subtraction.

When this sickle cell anemia victim feels the first stab of pain, he is experiencing what may be the onset of a painful "crisis" that can last up to a week and require hospitalization.

A sickle cell "crisis" occurs when the oxygen-carrying hemoglobin molecule causes the red blood cell to stiffen. Each affected red blood cell bends into the crescent shape of a sickle. As the cells sickle, they become rigid and lodge in the blood vessel, depriving the tissue beyond the blocked area from its supply of blood and oxygen and causing pain.

Many sickle cell patients must be hospitalized and treated with prescription narcotic pain relievers until normal blood flow is restored to the area. These youngsters can become drug-dependent, miss a lot of school and have behavioral problems.

Young sickle cell patients once depended heavily on drugs to relieve their pain. But now, a child like the 7-year-old boy in math class has an alternative. By mastering his "crisis" through self-hypnosis, he can "turn down" his pain in a few minutes, learn his math and finish his school day with the rest of his classmates.

Dr. Candace Erickson, at left, monitors Sallie Saldano as she coaches her son, Philip, throu

SELF-HYPNOSIS TO CONTROL PAIN IN CHILDREN IS A NEW CONCEPT

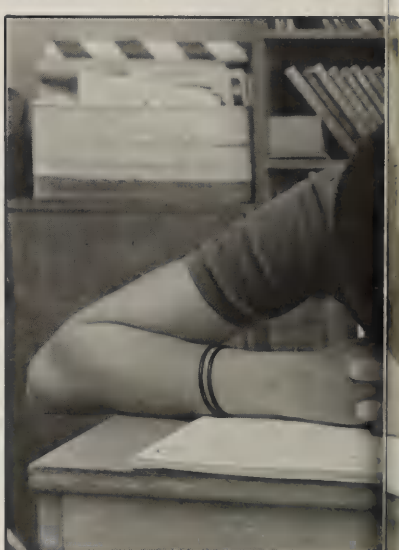
Doctors have used self-hypnosis to control pain in adults for several years, but its use in children is recent.

At Columbia-Presbyterian Medical Center, a group of pediatricians is teaching self-hypnosis to children who must undergo painful bone marrow and spinal taps as well as to sickle cell anemia patients to help them control their pain.

The concept of hypnosis originated with the Austrian physician Franz Mesmer in the late 18th century. More than two centuries later, doctors still don't know why hypnosis works.

HYPNOSIS IS AN ALTERED STATE OF CONSCIOUSNESS

"Hypnosis is an altered state of consciousness in which a person is so focused, concentrated and relaxed that he excludes other stimuli," says Dr. Candace Erickson, director of Developmental and Behavioral Pediatrics at



Jose Mercedes, 16, in the classroom. At right, Jose rests his head as he controls his pain.

ower pain.

Joel Landau

Joel Landau

the Babies Hospital division of The Presbyterian Hospital.

About 90 percent of the general population can be hypnotized to some degree. Children respond better to hypnosis than adults because they are more easily suggestible, says Dr. Erickson, also an assistant professor of pediatrics at the Columbia University College of Physicians & Surgeons.

"Parents often use trancelike states and suggestion inadvertently — when they rock their babies to calm them, it's similar to what happens in hypnosis. With young children, the parents suggest that the pain will disappear by kissing the bruise and making it better. It doesn't work all of the time, but hypnosis doesn't either," she says.

CHILDREN TUNE INTO THEIR BODIES AND FOCUS ON DISPELLING THEIR PAIN

As the children learn self-hypnosis techniques, they develop an awareness of their bodies, explains behavioral pediatrician Dr. Evelyn Davis, also an instructor in pediatrics at P&S. "By tuning in to the signals that appear before a 'crisis,' they can anticipate what's coming and then use the techniques to help them relax and concentrate on the mechanism that lessens their pain."

Dr. Davis describes a state of self-hypnosis to control pain as one of "focused attention." The children are peripherally aware of what's going on around them, but they focus their concentration on what they're doing to relieve the pain.

"They believe that they can help themselves," adds Dr. Davis. "It's a belief in mastery over something."

EACH CHILD USES A TAILOR-MADE VISUALIZATION TECHNIQUE

To control the pain, each youngster uses a visualization technique that he has selected himself.

For instance, one youngster uses self-hypnosis to transform himself into a powerful robot called Voltron who goes into the problem area and dispels or reduces the pain.

This child looks inside to the place that hurts, focuses on what's causing the pain and visualizes the area as if it were a massive tangle of knots. Because the protective robot has special powers, this child can dispatch him at will to reduce his pain. As the child slowly turns a knob in his mind, the robot moves in to untangle the painful knots.

TECHNIQUE IS SO SIMPLE THAT A CHILD CAN USE IT IN THE CLASSROOM

"If the pain doesn't disappear at once, the child knows that it will lessen in a little while. He can do this right at his desk in school," says Dr. Davis.

"When we teach children self-hypnosis, we let them know there's a place in the brain that controls the pain. They visualize this place as a control room with a panel of knobs similar to the knobs that control the sound on a television. They then visualize a colored wire, or nerve, connected to the place that's hurting and follow it up to the control panel in the brain. They find the colored knob corresponding to the wire and lower or turn off the pain just as they can the sound on the TV."

Children learn self-hypnosis in a series of two to four visits to Dr. Davis and Dr. Erickson. With the help of their parents, they practice the techniques at home and reinforce their skills so that they can use them confidently when they suffer pain.

CPMC RESEARCHERS STUDY THE VALUE OF SELF-HYPNOSIS IN PAIN CONTROL

Although those who use hypnosis to control pain feel that it works, its value is undergoing closer scrutiny. At CPMC, pediatricians are studying 60 children with sickle cell anemia to learn whether self-hypnosis can be used to control the pain from "crises" and thereby reduce the number of painful "crises" which result in absences from school, the use of narcotic drugs and hospitalization. The Robert Wood Johnson Foundation has provided funds to conduct the 18-month study.

Half of the children in this study group have been taught self-hypnosis. The other half are following routine treatment.

DOCTORS ASK HOW THEY CAN CONTROL WHAT HAPPENS UNDER HYPNOSIS

As doctors further study self-hypnosis at CPMC, Dr. Erickson says: "The question is not only what happens under hypnosis, but how we can channel it. Our minds and emotions influence our physiological responses. The hope is to understand all of this well enough to control such responses as pain consciously.

"There is a control system in the mind that is so sophisticated that we're just beginning to understand it," she notes. "The human mind has a huge potential for influencing how the body functions."

Joel Landau

NEW HEART-LUNG SUPPORT HELPS SAVE NEWBORNS WITH SEVERE LUNG DISEASE

Soon after birth, a newborn infant gasps for breath. Her skin is blue. As doctors rush to save the infant, they begin therapy to avert respiratory failure — the most common cause of death in newborns.

When an infant is virtually moribund because of respiratory failure, doctors at Babies Hospital, a division of The Presbyterian Hospital, now can use a procedure that directly adds oxygen and removes carbon dioxide from the blood for up to 14 days. This therapy, called extra-corporeal membrane oxygenation — ECMO — gives the baby's lungs a chance to rest and heal.

ECMO is used to treat newborn infants who suffer a variety of conditions that cause pulmonary blood pressure to increase dangerously at birth. As the pressure increases because of high pulmonary resistance in the blood vessels, blood flow slows down and less oxygen reaches the lungs.

DOCTORS USE NEW HEART-LUNG SUPPORT IN "PREMIES" AND FULL-TERM NEWBORNS

The problem may be due to underdevelopment of the lungs in a premature infant in which the air sacs collapse and cannot expand to bring in oxygen. Another life-threatening condition occurs when the baby's lungs are cramped into a small area just a fraction of the space they normally require to expand. This condition results from a diaphragmatic hernia and only can be corrected by surgery.

But, even with emergency surgery, the chances of survival are slim. Kevin and Jeanine Biondi, of Long Island, learned this shortly after their daughter, Christin, was born.

"Before Christin was two days old, she had been in two different hospitals. Twenty-four hours after surgery to repair her diaphragmatic hernia, my husband and I were told that nothing else could be done. But we also learned about the ECMO program at Presbyterian," says Mrs. Biondi.

The Biondis decided to place their daughter on ECMO even though the program is experimental. After a few days on ECMO, Christin began to look much better. After spending several weeks in the hospital, her mother reports that Christin now is a healthy, alert, happy and friendly 5-month-old. "We never expected to have a new baby who was so close to death. ECMO saved my baby," says Mrs. Biondi.

Doctors resort to ECMO therapy only when newborns have respiratory failure so severe that conventional treatment with medications and respirators fail.

"Ten percent of the seriously ill babies with lung conditions die. ECMO is a new high-tech therapy designed to help save those babies who would die otherwise," says pediatric surgeon Dr. Charles J. H. Stolar.

Columbia-Presbyterian Medical Center is the only hospital in the New York, New Jersey and Connecticut area that offers ECMO therapy and is a major referral center for newborns in the Northeast.

ECMO not only gives the infant's heart and lungs a rest and a chance to heal, but helps minimize the amount of damage to the baby's delicate lungs caused by high oxygen concentrations and respirator pressures ordinarily used to help these infants breathe.

The oxygenating device in ECMO resembles a roll of paper towels made of thin "double-ply" silicone rubber sheets. As blood passes over each silicone sheet, actually two sheets with oxygen flowing between them, it picks up oxygen and exchanges it for carbon dioxide.

After a child is placed on ECMO therapy, the results are dramatic. Even after just a few hours on ECMO, these infants begin to look pink and alert.

As an infant's condition improves, doctors wean the baby from the machine. The child's natural ability to maintain an adequate level of oxygen in the blood gradually increases while on ECMO, and the amount of freshly oxygenated blood from the bypass machine is reduced as the baby's lungs take over.

In his laboratory at Columbia University's College of Physicians & Surgeons, Dr. Stolar and senior research associate Dr. Peter Dillon are studying ECMO's role in pulmonary blood flow. "We're asking what ECMO does to modify the lungs to allow for a normal flow of blood. We know that babies with pulmonary hypertension get better on ECMO. But we don't understand how ECMO works," says Dr. Stolar, assistant professor of surgery at P & S.

Despite the dramatic improvement of most of the babies who undergo ECMO, Dr. Stolar cautions that the therapy is not a panacea. "It's not for every baby who needs to be placed on a respirator. ECMO is specifically for infants who are dying despite every effort to save them."

Dr. Charles J.H. Stolar with ECMO apparatus. Inset: Silicone sheets of ECMO's membrane lung.

PEDIATRICIANS SET UP A CORNER OFFICE FOR PRIMARY CARE

Kasia Gruda

Ana Santana and her daughter, Taiana, chat with Pediatric Nurse Practitioner Paula Artaserse during a visit to the General Pediatric Group Practice here.

Every time the young mother brings her child in for health care she sees a familiar face at the desk. The receptionist, the nurses and the doctors know and recognize her and this makes her feel at ease.

In this era of high-tech care and subspecialty services at a modern, massive medical center, health care experts at The Presbyterian Hospital are hearkening back to Main Street, U.S.A., when doctors' offices were available in almost every neighborhood.

Last year, the Hospital opened a temporary site — the Nagle Avenue Primary Care Center — to provide routine health services, including pediatrics, for residents of the Washington Heights/Inwood neighborhood.

INNOVATIVE PROGRAM WILL BRING BACK PRIMARY CARE

This was a pilot effort to expand services in the community, which will become part of the innovative Ambulatory Care Network Corporation (ACNC) that was created to re-establish primary care in the community.

A fire early on April 14 destroyed the facility, which has been relocated to a temporary site on the campus at Columbia-Presbyterian Medical Center until an appropriate site off-campus can be located. The experience that was gained at the Nagle Avenue site has been invaluable.

"We're re-inventing the wheel in a way by emphasizing a community based approach," says Denise Reed, executive director of the ACNC.

"Our patients receive care from a neighborhood physician the same way they did decades ago. Back then, children used to be cared for by a family physician. As the child got older, the same doctor charted his progress. The same doctor saw to both the child's major and minor problems," adds Ms. Reed.

The ACNC is trying to rebuild this relationship as it once existed. For a patient, this includes everything from the ease of making his appointments to having his medical questions answered.

The program is sponsored by Presbyterian but operates independently as a network linked to the Hospital.

The network will consist of several

physicians who will work at different sites in the community.

The governing board of the program will consist of doctors, administrators, community leaders and patients. "This board will set the direction of the network," says Ms. Reed.

"It's a novel approach to put private practices in the community instead of having the medical center provide all the care," says Ms. Reed.

"Having sites in the neighborhood like this is a natural way of providing primary care in the community. Care is more accessible to patients and there's less bureaucracy," says Dr. Matilde Irigoyen, medical director of the General Pediatric Group Practice (GPGP).

Since the GPGP group practice began at the Hospital in 1978, the program has grown. Fourteen doctors and five pediatric nurse practitioners now serve young patients of all ages, from newborns through 19-year-olds. Each patient sees the same doctor or nurse practitioner for each appointment, which assures continuity of care.

The group practice is the main source of comprehensive pediatric care at Presbyterian. It also serves the temporary primary care center site and will serve future sites. "The demand for our services keeps growing and we're not able to keep up with the increasing number of patients who need health care. Our goal is to expand further into the community," says Dr. Irigoyen.

As each patient enters one of Presbyterian's primary care community practices, he begins a continuous relationship with the network and with PH.

"We have a long-term commitment to each of our patients. Each child gets personal care in that he always sees the same physician," she adds.

As the Hospital begins its comprehensive modernization program, through the ACNC, it plans to build an expanded primary care program, which will include pediatrics, internal medicine, obstetrics/gynecology and dentistry.

High-intensity and critical care services for children also will be expanded at the Medical Center, where new surgical suites and a new pediatric imaging center will be located.

"The need for an expansion of our services is growing daily. The demographics of the area speak for themselves — there's an extremely high birth rate in this community and a very young population. From 1970 to 1980, the birth rate in this community increased 23 percent," says Dr. Irigoyen. "This compares with a 23.7 percent decline in Manhattan and a 20 percent drop in births in New York City."

Through the ACNC, the Hospital can treat the community and target its services where they are most needed. "The ACNC is looking at patients in relation to the problems in the community. We review such epidemiologic data as births, deaths, incidence of disease and the number of elderly residents here," says Ms. Reed. "We ask what we can do to provide comprehensive primary care that encourages regular checkups and preventive health care as well as episodic medical treatment."

Joel Landau

Dr. Matilde Irigoyen gives instructions to Raquel Machado as her son, Kenny, waits for his appointment.

CHILDREN AND THEIR FAMILIES LEARN TO MANAGE ASTHMA ATTACKS

Health educator Jill Rips, second from right, guides a teaching play session in which children use puppets to learn about asthma. From left are: Daniel Collazo, Catherine Quinones, Robert Quinones, Ms. Rips and Jeff Schomberg.

When an asthma attack occurs and impairs a child's ability to breathe, both a parent and child feel panic and a sense of being out of control. Often, the family will rush the child to the hospital emergency room because they fear it is a life-threatening situation.

Catherine Quinones, of Washington Heights, was one of those parents. "For a whole year, by 7 o'clock every morning, I was at the Emergency Room with my son."

Her son, Robert, now 8, used to wheeze all night. To his mother, the situation seemed hopeless. "I wondered whether I'd ever be able to do anything to help him."

Mrs. Quinones, like the parents of other young asthma victims, stayed close to home out of fear that her son would have an asthma attack and she wouldn't be there to help him.

Now, she brings her son to the Emergency Room once a month instead of once a day. She also feels less panicky since she and her son enrolled in an asthma self-management program at the Babies Hospital division of The Presbyterian Hospital.

HOSPITAL CREATES PROGRAM TO HELP FAMILIES HELP THEMSELVES

To lessen and even eliminate such disturbances in the lives of families like the Quinones, the Hospital created a self-help program.

"We wanted to help families become more independent while maintaining contact with a consistent source of medical care," says Dr. Charles H. Feldman, a pediatrician here. "Our goal was to help them become less reliant on emergency visits to the hospital."

As a result, Dr. Feldman and the self-management research team developed a health education program called "Open Airways" that stresses self-management of asthma.

The program features classes for parents and children and uses puppet shows, games and group discussions to teach such things as: How To Take Care of an Attack, How To Give

Medicine, How To Talk to the Doctor, Prevention, Appropriate Physical Activities and School and Asthma.

"OPEN AIRWAYS" PROGRAM HERE BECOMES A MODEL FOR THE NATION

Since the program was created here in 1978 under the auspices of the National Heart, Lung and Blood Institute, it has become a model for the nation. This year, the National Institutes of Health have set up 10 workshops featuring "Open Airways" for health care professionals and educators around the country to promote self-management of asthma.

The "Open Airways" program is used at the University of Rome in Italy for children with asthma. It also has been brought into two school districts in New York City.

Asthma constricts the air tubes in the lungs as if one were squeezing a garden hose and halting the flow of water. The patient with asthma feels tightness in the chest, coughs, wheezes, and has great difficulty breathing. It is the most common chronic disease of childhood and the leading cause of disability and school absenteeism. At Presbyterian, it is the No. 1 diagnosis leading to acute hospitalization for children.

"By itself, medical management of asthma has its limitations. We felt that if the patient and his family could assume a greater role in caring for the disease, there would be fewer disruptions in their lifestyles," says Dr. Feldman.

"Asthma causes an uproar in a family and child's life — lost time from work, lost time from school, the cost of hiring babysitters while taking a child to the hospital and the expense of getting to the hospital," he explains.

PATIENT AND FAMILY ASSUME GREATER ROLE IN ASTHMA CARE

Since the program first was begun, it has become more child-oriented. "We're asking at what age can a child assume responsibility for part of his health care? We've found that youngsters in the fourth, fifth and sixth grades are able to do more for themselves. Adolescents can take full responsibility for self-management of their asthma," says Dr. Feldman, also assistant professor of clinical pediatrics at the Columbia University College of Physicians & Surgeons.

CHILDREN LEARN TO READ THE SIGNS THAT POINT TO AN IMPENDING ATTACK

"Our program emphasizes the concept that a child can learn to recognize his own body signals which indicate that an attack is impending," says Dr. Feldman. "The child in our program learns appropriate steps to manage an attack at home and breathing exercises for relaxation. We also coach the parents on the need to relax — it's very important that both parent and child stay in control of the situation."

As a result of the program, there have been fewer asthma-related visits to the emergency room and less hospitalizations.

"Self-management of asthma has enabled the families of children with asthma to assume greater control over their lives," says Dr. Feldman. "Through self-help, they can improve their lifestyles and reduce health care costs."

BABIES HOSPITAL: A CENTURY OF CARE FOR CHILDREN

The name Babies Hospital has been synonymous with excellence since it was founded nearly a century ago.

In the late 1800s, diphtheria, typhoid, pneumonia, scarlet fever, meningitis and other infectious diseases ran rampant over the young population — fewer than half of the infants born in New York lived to become adults.

High infant mortality rates raised the consciousness of a small group of women who gathered on June 23, 1887 and incorporated The Babies Hospital in the City of New York "to provide medical and surgical aid and nursing for sick babies."

On the clinical side, Babies Hospital earned an early reputation for giving the highest quality medical care to sick children and to maintaining the health of well children. To support the care of its young patients, pediatricians and nurses here long have conducted extensive research efforts into the causes of diseases.

DECADES OF RESEARCH YIELD LIFE-SAVING ANSWERS

Decades of research at the Columbia-Presbyterian Medical Center have yielded answers that have produced treatments for many diseases and saved the lives of many children.

Pediatrician Dr. Hattie Alexander developed the first serum therapy of bacterial meningitis in 1938. This treatment helped save eight of every 10 children who received it, thus enabling them to live normal lives.

During that same year, Dr. Dorothy H. Anderson published the first complete description of cystic fibrosis. CPMC has remained a major international center for the treatment of this disease.

Studies of glucose metabolism in children by Dr. Howard Mason resulted in a definition of the management of glycogen storage disease in 1941.

HOSPITAL WAS ONE OF THE FIRST TO CREATE A PSYCHIATRIC CLINIC

Doctors studying obesity in children linked the condition to emotional causes rather than to hormonal imbalance as had been thought previously. This correlation in 1938 came from the pediatric psychiatric clinic here, one of the first of its kind in the United States.

When pediatricians and obstetricians evaluate the general well-being of an infant at birth, they use an assessment called the Apgar score. The score, named after PH anesthesiologist Dr. Virginia Apgar, is used worldwide.

The tradition of contributions to the care and treatment of children here continues today underscored by intensive research efforts to save lives and to improve the quality of life for young patients and their families. ■

TELETHON WILL FEATURE BABIES HOSPITAL

The Babies Hospital division of The Presbyterian Hospital is among four children's hospitals which are joining together for a telethon in this region.

The Children's Miracle Network Telethon is a national event sponsored by the Osmond Foundation which will be broadcast on June 1 and 2 on Channel 9, WOR-TV, in New York. The event will be telecast locally on Saturday, June 1, from 11 p.m. to 3 a.m. The final star-studded hours will be broadcast on Sunday from 1 to 6 p.m.

Entertainment will include special broadcasts from the Osmond Studios in Provo, Utah, as well as local programming from the New York area.

Actor John Amos, who portrayed Kunte Kinte in the television mini-series "Roots," will serve as host of the New York segments.

WOR-TV personalities Lloyd Lindsay Young, the News 9 Weatherman, and Molly McCloskey-Barber, best known as Miss Molly of "Romper Room," will serve as co-hosts from New York.

In 1984, the Telethon raised $12 million across the United States. The Osmond Foundation, which was founded by the performing Osmond family, produces the Telethon in association with the National Association of Children's Hospitals and Related Institutions.

All funds raised locally through the Telethon will be used by the regional hospitals to improve pediatric care.

ASSOCIATES OF BABIES HOSPITAL WILL SUPPORT PEDIATRIC RESEARCH

The Associates of Babies Hospital has been formed to support research, clinical care and teaching at the hospital and within the Department of Pediatrics at Columbia-Presbyterian Medical Center.

The newly created program was inaugurated on May 1 at the Babies Hospital division of The Presbyterian Hospital. The Associates participated in tours and discussions of the Babies' heart program, the Neonatal Nursery, the Therapeutic Nursery for the treatment and prevention of child abuse, and learned about the planned bone marrow transplantation unit. Future events for the Associates will focus on other areas of Babies Hospital.

Families may join the Associates program as sponsoring members at $500 per year or as associate members at $250 per year.

"Contributions to the Associates program will help ensure that research continues to be a vital part of Babies Hospital," says Nancy Hoppin, Associates program chairman.

For additional information about the program, contact Virginia Keim, The Associates of Babies Hospital, The Presbyterian Hospital, BHS-114, 630 West 168th Street, New York, New York 10032.

Joel Landau

FOOT SURGERY ALUMNI ENJOY SOCCER GAME

Children who were treated for the crippling disorder of club foot and recovered after surgery race for the ball during a special soccer game on the Babies Hospital lawn at Columbia-Presbyterian Medical Center. The young soccer players are "alumni" of the pediatric orthopedic surgery departments of The Presbyterian Hospital and The Hospital for Joint Diseases. The children all now enjoy normal function of their feet.

SAVE A LIFE: CONSIDER ORGAN DONATION

All of the attention paid to artificial hearts in the media has failed to focus on the key issue: the shortage of donor organs.

Joann Lamb, R.N., coordinator of the Heart Transplant Program at The Presbyterian Hospital, says six people have died here waiting for heart transplants. These deaths occurred over a four-month-period because of a lack of organ donation in the New York metropolitan area.

Kidney Transplant Program coordinator Judith Cianci, R.N., notes that 84 people are on the waiting list for kidney transplants at Presbyterian. Nationwide, more than 12,000 to 15,000 individuals currently are waiting for a new kidney. Six hundred of these patients live in New York City.

QUALITY OF LIFE IS BETTER FOR KIDNEY RECIPIENTS

"Patients with a functioning kidney have a much better quality of life," says Ms. Cianci. "Also the costs are lower. For kidney transplants, first-year costs range from $30,000 to $40,000, but in subsequent years the costs are much lower. The only alternative is dialysis, which ranges from $25,000 to $40,000 a year."

"For heart transplant candidates, there is no substitute for a transplant other than artificial hearts, and relatively few people will be able to take advantage of that technology for some time," says Ms. Lamb.

For more information and a donor card, call the transplant program in your area or the Kidney Foundation. In New York City, write to the Regional Transplant Program, 2 East 103rd Street, New York, N.Y. 10029 (212 861-7370). ■

Joe Pineiro

DR. WIEDEL IS HONORED AS PRACTITIONER OF THE YEAR AT CPMC

The Society of Practitioners of CPMC presented its Practitioner of the Year Award to Dr. Philip D. Wiedel on March 27 at a dinner in his honor.

The award is given annually to the physician who exemplifies the highest tradition of patient care and who excels as a teacher of medicine. From left are: Howard L. Clark, chairman of the board, Dr. Wiedel, Dr. David B. Moore, president of the Society, Dr. Thomas Q. Morris, president of PH, Dr. Joseph A. Silverman and Dr. Michael H. Wechsler.

The society is an organization of physicians at CPMC whose aim is to improve the quality of patient care. ■

FOOTNOTES

MATERIALS MANAGEMENT: **Fred Baird**, director of the Central Sterile Processing Department, has been elected to the New York Academy of Sciences.

NEUROLOGICAL SURGERY: **Dr. Bennett M. Stein**, director of the Service, was named an honorary member of the Sociedade Nordestina de Neurocirurgia during a recent meeting of the group in Brazil.

NURSING: **Dorothy A. O'Sullivan**, administrator Nursing Services, has been named one of 40 senior nurse executives selected nationwide to participate in a management program at the University of Pennsylvania's Wharton School of Business.

OBSTETRICS/GYNECOLOGY: **Dr. Allan Rosenfield**, acting director of the Service, served as moderator during the introductory program at the Third Annual Conference on Maternal Mortality and Morbidity of the New York County Medical Society.

PSYCHIATRY: **Dr. Alexander H. Glassman**, director of Clinical Psychopharmacology at the Psychiatric Institute, and **Dr. Donald E. Kornfeld**, chief of the Consulation-Liaison Psychiatry Service at Presbyterian, participated in a recent symposium on "Stress and Cardiovascular Disease," sponsored by the Columbia University College of Physicians & Surgeons in New York.

RADIOLOGY: **Dr. Walter E. Berdon**, director of Pediatric Radiology, recently presented a lecture entitled "Update on Pediatric Genitourinary Radiology Including CT and Ultrasound" before the Society of Uroradiology in St. Thomas.

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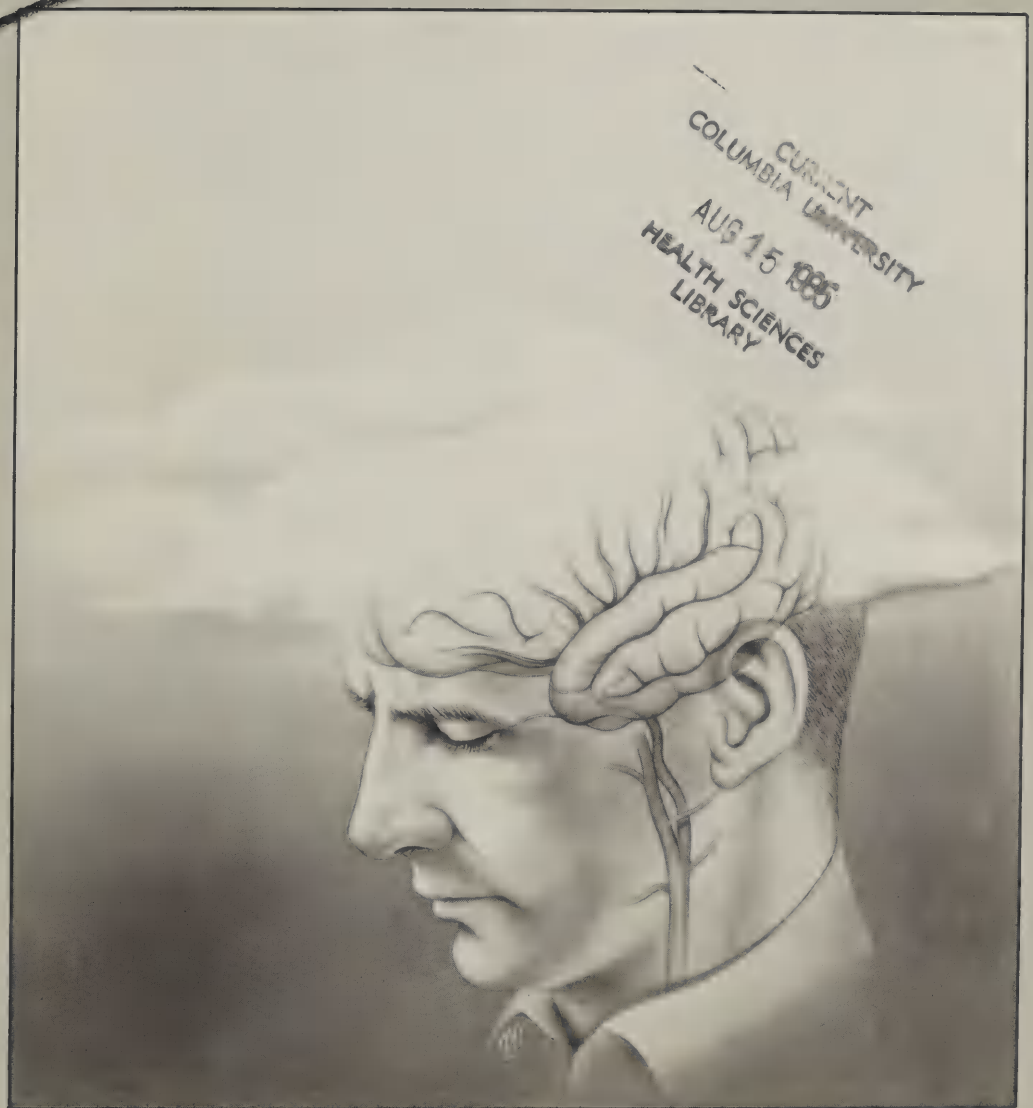

THE MIND'S ROLE IN HEALING

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IMPORTANT NOTICE TO OUR READERS

You are invited to participate in The Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity, unitrust life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information, call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

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ABOUT THE COVER

The mind remains one of the last frontiers of the unknown. Illustration by Robert J. Demarest. Courtesy of Modern Medicine, Harcourt, Brace, Jovanovich.

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THE HUMAN MIND: DOCTORS PROBE ITS ROLE IN HEALING THE BODY

The Bettmann Archive

Woodcut showing the cavities of the brain from "Albertus Magnus, Philosophia Naturalis."

Mens sana in corpore sano.
(A sound mind in a sound body.)

—Juvenal, A.D. C. 50 - C. 130

Long before there were psychiatrists, man knew the value of having a sound mind in a sound body. Despite centuries of study and speculation, the phenomenon of his own mind remains one of man's major unsolved puzzles.

Attempts to define and classify personality and mental health probably began with Hippocrates' early description of melancholia. Centuries later, the medieval scholars considered body fluids — the Four Humours — as a key to health and temperament. The 19th-century phrenologists studied the contours of the skull in the belief that these held clues to a person's health and temperament.

At the turn of the 20th century, Sigmund Freud's theories began to rock previously formed notions about the mind. Following Freud's lead, the field of psychiatry believed that life experience was the reason a person's mind went awry.

A BIOLOGICAL REVOLUTION OVERTAKES PSYCHIATRY

Since the mid-1950s, a virtual revolution in psychiatry has modified that point of view. High-tech advances in imaging devices have enabled doctors to look at brain structure and function. Increased knowledge about the chemical and electrical workings of the brain have made way for the development of medications to help manage such psychiatric disorders as depression and schizophrenia.

The role of chemical substances, called neurotransmitters, in many psychiatric disorders, such as depression, schizophrenia and Alzheimer's disease, is under study at Columbia-Presbyterian Medical Center. In certain disorders, these chemical messengers may be suppressed. New medications have been developed by doctors here to interact with neurotransmitters and their receptors.

CHEMICAL DELIVERYMEN CONVEY IMPORTANT MESSAGES IN THE BRAIN

Each time one of the more than 100 billion nerve cells in the brain fires off, it releases a neurotransmitter. These chemical deliverymen have to cross a tiny chasm, or synapse, between neurons. After crossing the passage, the neurotransmitters make their way to

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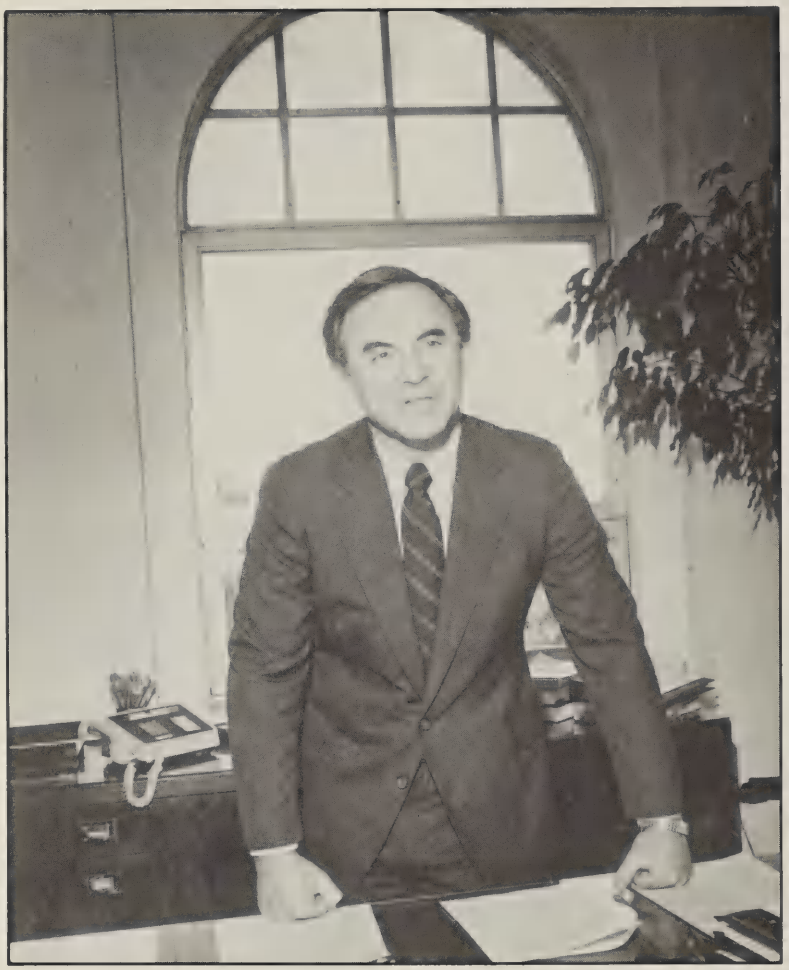


Joel Landau

Dr. Herbert Pardes, director of the Psychiatry Service: "The mind is a concept that is hard to define."

receptors on the end of the intended nerve cell, where the chemical message is received and passed along to the next neuron.

The synapse is the junction at which the transfer of information (learning) appears to take place.

LEARNING AND MEMORY: GETTING DOWN TO THE CELL

The enigma of how the complex human brain learns and remembers is being studied here at the cellular and molecular level.

Neurobiologists studying the biology of memory have suggested that a physical change takes place when the brain learns a piece of information and stores it for future use. It is thought that the change occurs in the connections between the nerve cells at the synapse.

Scientists at CPMC also are studying the role of genetics in psychiatric disorders in an effort to find improved treatment methods.

DOCTORS ASK: WHAT IS THE MIND'S ROLE IN HEALING?

While scientists at CPMC and the New York State Psychiatric Institute on campus study the complex chemistry and circuitry of the brain, doctors at The Presbyterian Hospital are asking: What is the mind's role in healing? They are finding that psychological, as well as biological factors influence health.

For instance, studies here have shown that patients who received psychotherapy while undergoing radiation therapy for cancer had fewer side effects from the therapy and a better quality of life.

While research into such things as the chemistry of behavior and the benefits of "talk therapy" continues, the question remains: How does the brain and its chemistry influence the mind? Is the mind the same as the brain? Or is the brain "the seat of the mind" as Hippocrates suggested thousands of years ago?

THE MIND IS A CONCEPT THAT'S DIFFICULT TO DEFINE

"The brain is the biological material in a person's head. The mind is a concept that is hard to define. Mind involves preference, will, thought, philosophizing — it's a more elusive quantity," says Dr. Herbert Pardes, director of the Psychiatry Service at The Presbyterian Hospital.

Dr. Ethel Person, director of the Psychoanalytic Training Center at the Columbia University College of Physicians & Surgeons, says: "Scientists can visualize the brain and its synapses, yet each of us has a subjective experience. The mind is a product of the brain. But if one could look into each cell of the brain, the description of the observation would be the report of the researcher's subjective experience. This consciousness belongs to the realm of the mind."

Among the many research projects under way at the Medical Center are studies into how a person's experience affects his physiological makeup as well as his behavior. "We're asking how experience may have a role in affecting the development of disease," says Dr. Myron A. Hofer, attending psychiatrist at Presbyterian and director of Developmental Psychobiology at PI.

THE MIND: ONE OF THE LAST FRONTIERS OF THE UNKNOWN

"One of the great mysteries that remain is how the mind's inner experience is generated by the tissue of the brain. Along with outer space and the atomic nucleus, it is one of the last frontiers of the unknown," says Dr. Hofer.

Dr. Pardes, who also serves as chairman of the Department of Psychiatry at P & S, says: "We're increasing our understanding of the brain and how it relates to behavior. At CPMC, research and clinical services combine to keep this institution in the forefront of the psychiatric field."

PSYCHIATRISTS STUDY THE CAUSE AND COURSE OF ILLNESS

The woman was 31, and had been suffering from psoriasis for several years. For a long time, the skin disease caused her discomfort and an uneasy feeling about her appearance. Eventually, her concern over her flaking, scaly skin turned into an emotional disability.

Another patient had a cancerous growth and needed surgery that would result in disfiguration of his face. He became depressed and withdrawn because he feared the surgery would ruin his relationship with his wife.

"Many times, it isn't the illness that concerns the patient as much as his relationship with someone else and how he fears the illness will affect it. When illness begins to have a psychological effect, mental health specialists can step in to help the patient resolve the problem," says Dr. Donald S. Kornfeld, director of the Consultation-Liaison Psychiatry Service at The Presbyterian Hospital.

At Presbyterian, liaison psychiatry deals directly with specific psychiatric problems. "When liaison psychiatry is available, a patient who comes in depressed, frightened or fearful can be identified early and helped. Consultation-liaison psychiatry helps the hospital provide more effective overall medical management."

Joel Landau

Dr. Donald S. Kornfeld is probing the role of psychological factors in the cause and course of illness.

LIAISON PSYCHIATRY ALSO WORKS WITH THE STAFF TO RELIEVE STRESS

The service works with the medical staff to relieve the problem of coping with stress and illness.

"Liaison psychiatry also stresses working with the staff itself, for instance, to help avert 'burnout' among staff workers," says Dr. Kornfeld, who is professor of clinical psychiatry at the Columbia University College of Physicians & Surgeons.

The idea that state of mind can affect state of health is far from new. "Fifty years ago, the Department of Medicine at P & S established a program in which psychiatrists helped medical students here discuss the emotional aspects of being medically ill," he explains.

"The ultimate goal of liaison psychiatry is to provide better medical care. We do this through clinical care, as well as through education and research. Consultation-Liaison Psychiatry focuses on applying psychiatry to the hospital in general," says Dr. Kornfeld. "We work with all of the services . . . in helping them and their patients deal with any problems that come up."

STUDIES SHOW THAT A HEALTHY STATE OF MIND CAN SHORTEN HOSPITAL STAY

A study conducted here by Dr. Stephan J. Levitan, assistant attending psychiatrist, and Dr. Kornfeld illustrated how liaison psychiatry helped reduce the length of hospital stay: Elderly patients with fractured hips who had early routine psychiatric consultation by a liaison psychiatrist left the hospital 12 days earlier than a control group. In addition, more patients who had psychiatric consultation were able to go home instead of to a nursing home.

The quality of life also improved for cancer patients receiving radiotherapy treatment while undergoing psychotherapy here, a newly released study shows.

Psychiatrist Dr. Bruce M. Forester, who conducted the psychotherapy, says that many of the patients had nightmares in which they were being attacked by a large machine.

"The nightmares were related to their worry that the radiotherapy, which involves large machines, would destroy them," says Dr. Forester, also an assistant professor of clinical psychiatry at P & S.

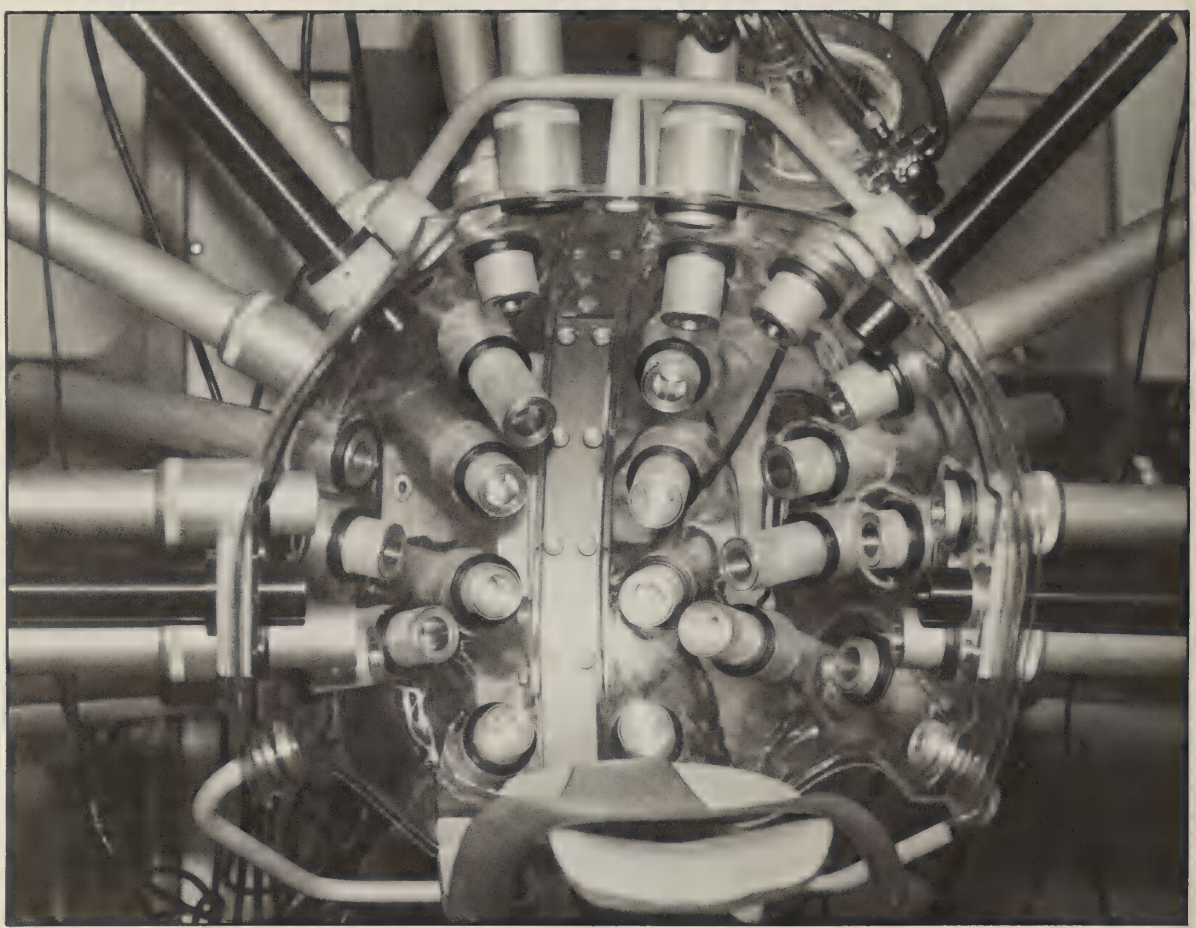
Radiotherapy usually produces such physical symptoms as nausea, vomiting and fatigue. Patients also tend to be fearful, anxious and depressed while being treated. Those patients who received the supportive psychotherapy reported fewer negative physical and emotional effects than a control group, reports Dr. Kornfeld, who helped conduct the study along with Dr. Forester and Dr. Joseph L. Fleiss, professor of biostatistics at P & S.

TENDING TO EMOTIONAL FACTORS MAY HAVE A POSITIVE EFFECT

"Dealing with the emotional factors that accompany certain forms of treatment may have a positive effect on the quality of life of a patient during or after treatment," says Dr. Kornfeld.

"Psychiatry and medicine need to conduct more collaborative research to evaluate the potential impact of psychiatric interventions on clinical care. We also must determine what role psychological factors contribute to the cause and the course of illness."

DOCTORS INTERPRET THE "SIGNATURE" OF DISEASE IN THE BRAIN



Above: Doctors use this instrument to measure the pattern of blood flow in the brain to determine the presence of certain disorders, such as Alzheimer's disease. Below: Dr. Isak Prohovnik reviews a computer-generated display of regional cerebral blood flow.

Just as each person's handwriting is distinctive, certain diseases may leave their characteristic signature in the brain.

"We're learning to recognize some diseases by the pattern of blood flow in the brain," says Dr. Isak Prohovnik, assistant professor of psychology at Columbia University's College of Physicians & Surgeons and director of the Brain Imaging Section in the Department of Biological Psychiatry at the New York State Psychiatric Institute, both part of Columbia-Presbyterian Medical Center.

By measuring the rate of cerebral blood flow, doctors can draw conclusions about how hard the cortex (outer layer of the brain) is working. They do this by placing the patient's head in a helmet-like device and administering slightly radioactive gas. As the patient inhales the xenon, his bloodstream absorbs the gas. Each of the 32 probes on the helmet traces the gas as the blood carries it through the cortex.

Among the diseases doctors are attempting to map using this technique are: Alzheimer's disease, stroke, depression and mania.

ALZHEIMER'S DISEASE PRODUCES DEBILITATING DEMENTIA

Alzheimer's disease is a form of dementia that can debilitate the most intelligent, productive people. It usually begins with memory loss. As it worsens, the ability to speak and communicate often becomes impaired. In severe cases, there may be a complete change in personality.

Every year, the incidence of Alzheimer's disease increases. More than 2 million Americans, or 11.4 percent of the population over 65, are afflicted with Alzheimer's disease. Doctors don't know what causes the disease, nor do they have a specific test to diagnose it.

However, regional cerebral blood flow studies point out definite abnormalities that may enable the identification of the early stages of Alzheimer's disease.

SEVERITY OF ALZHEIMER'S DISEASE CORRELATES WITH BLOOD FLOW

"Alzheimer's disease has a predictable blood flow pattern. The severity of the disease seems to go along with blood flow measurements. In early cases, there's a reduced flow of blood to certain areas of the brain," explains neurologist Dr. Richard Mayeux.

"Perhaps the patient is trying to compensate for the abnormality in the area. Eventually, as the disease progresses, cells in the area have reduced activity and require less blood flow," says Dr. Mayeux.

Psychiatrists and neurologists at CPMC are looking at regional cerebral blood flow in an attempt to predict and chart the course of the enigmatic Alzheimer's disease.

CEREBRAL BLOOD FLOW STUDIES HELP DOCTORS ASSESS NEW DRUGS

Using cerebral blood flow studies, doctors here are conducting clinical trials of drugs that may be useful in halting the progression of Alzheimer's disease.

"We hope to be able to measure the level of improvement or deterioration in cerebral blood flow to see how the medications are working," says Dr. Mayeux, also an associate professor of clinical neurology at P & S.

Because Alzheimer's disease is a progressive, degenerative condition, some drugs under study may work well only in patients suffering the early stages of the disease. "They may have no effect in advanced patients. In our studies, we're asking if we can identify which patients will react favorably to drugs," says Dr. Prohovnik.

CORTICAL MAPS SHOW ABNORMAL AREAS IN OTHER DISEASES

Studies of sickle cell anemia patients within the Division of Pediatric Neurology may reveal cortical maps with distinct areas of abnormality, which, if left untreated, can lead to stroke. "A large number of sickle cell patients suffer from stroke. We hope to be able to identify the features of the disease that are dangerous," Dr. Prohovnik adds.

Unlike Alzheimer's disease and stroke, some diseases have no signature. "For instance, in schizophrenia, we have not yet found a blood flow abnormality that is specific to this disease. On the other hand, we have evidence suggesting that treatment by certain drugs has different effects on brain blood flow, depending on the type of schizophrenia," says Dr. Prohovnik.

While regional cerebral blood flow may indicate disrupted activity in an area of the brain, it cannot indicate which chemical system is malfunctioning.

Many diseases involve a disruption of various chemical substances. For instance, in Alzheimer's disease, patients show a depletion of the chemical compound acetylcholine, which is necessary to transmit nerve impulses essential to learning and memory.

"Different diseases are caused by disruptions in different chemical systems. We'd like to be able to measure the chemicals called neurotransmitters because they transmit and receive signals between nerve cells within the body. We also want to learn how they work in the brain. When they break down, communication between cells stops, for instance, as in Alzheimer's disease. The role of neurotransmitters seems to be important in many brain diseases," says Dr. Prohovnik.

OTHER IMAGING TECHNIQUES ARE BEING STUDIED EXPERIMENTALLY

While cerebral blood flow studies are being used clinically here, other ways of imaging the brain are under study. These include Magnetic Resonance Imaging (MRI), which can perform a chemical analysis of the human body point by point.

The MRI scanner at CPMC can detect the slightest imbalances in the chemical composition of brain cells. For instance, a stroke-damaged brain has a higher than normal concentration of sodium. "Because MRI can detect changes in the hydrogen, phosphorous and sodium levels within small brain regions, we are using this technology to detect early changes in the brain," says Dr. Sadek Hilal, director of Neuroradiology at Presbyterian.

Single Photon Emission Computerized Tomography (SPECT) and Positron Emission Tomography (PET) also have great potential for studying the biochemical and physiological changes in the brain.

"PET, which measures the rate at which the brain uses energy, may be able to point to changes in the brain before there are any clinical signs," says Dr. Mayeux.

Dr. Hilal, who designed a PET scanner being used experimentally here, says: "In certain psychotic disorders, some areas of the brain show definite changes in their consumption of glucose and oxygen, the principal sources of energy in the body. We do not know the mechanism by which this happens, but we are using this new technology in the hope that we will find some clues to create a better image of the brain."

BIOCHEMICAL ABNORMALITIES MAY BE THE KEY TO UNDERSTANDING DEPRESSION AND PANIC ATTACKS

Depression is considered the common cold of emotional disorders, because it afflicts almost everyone at one point or another in a lifetime. Unfortunately, some depressions are more like tuberculosis than the common cold because the symptoms can subside, only to flare up again, and go on to disrupt a person's life.

Since Hippocrates first described this disorder that makes its sufferers lose their zest for life, an array of theories about the cause of depression has been proposed.

Until recently, depression, along with other forms of mood disorders, was thought to be the product of a person's experience.

DOCTORS PROBE THE ROLE OF BIOLOGY AS A TRIGGER OF DEPRESSION

"While environmental and psychological factors have a role in producing both major and minor mental illnesses, it's becoming more apparent that such disorders as depression also can have a biological basis," says Dr. Donald Klein, attending psychiatrist at The Presbyterian Hospital at Columbia-Presbyterian Medical Center.

Some patients' depression may be due to a feeling of overwhelming powerlessness: for instance, a wife who feels locked into a miserable marriage and cannot divorce because of her religious beliefs. In others, a defeat, disappointment or loss of a loved one can precipitate depression. Yet another kind of depression may be biologic, because it stems from a person's own chemistry.

"The talk therapies — psychotherapy, psychoanalysis and behavior therapy — often can help people who feel demoralized, defeated or full of despair. But in patients whose depression is activated by a biological mechanism, treatment with antidepressant medications has been very helpful in most cases," says Dr. Klein, who is director of research at the New York State Psychiatric Institute and professor of psychiatry at the Columbia University College of Physicians & Surgeons.

BRAIN CHEMISTRY AND DEPRESSION: SEEKING THE RIGHT CONNECTION

Scientists studying the brain are probing the chemistry that makes communication possible among the billions of nerve cells in the brain. Chemicals called neurotransmitters are produced and released at the junctions of nerve cells. When neurotransmitters are released, these chemicals cross a tiny gap called the synapse and stimulate the adjoining nerve cell. The chemical contact may excite the nerve cell, causing it to transmit a message, or, it may inhibit the neuron, thus halting the line of communication.

Drugs used to treat depression, anxiety and schizophrenia appear to work by interacting with neurotransmitters or neurotransmitter receptors because they make these chemicals either more or less effective, says Dr. Klein.

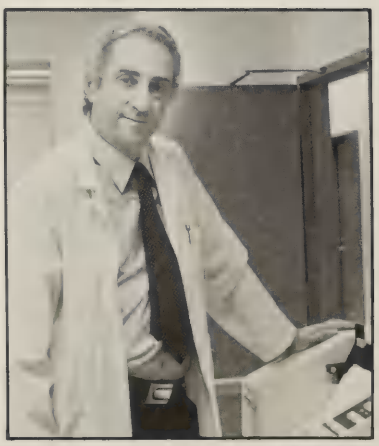
Doctors have found that the neurotransmitter norepinephrine has a major role in mood regulation. Overactivity of dopamine circuits has been suggested as causing disrupted brain function in schizophrenics.

TARGETED USE OF MEDICATIONS CAN HELP MANY DEPRESSED PATIENTS

"The use of drugs in a targeted manner can be very effective in treating many forms of depression. Many patients go to their general practitioners when they are feeling lethargic, hopeless and uninterested in life. They complain of having sleep disturbances, a decrease in appetite and a loss of interest in sex," says Dr. Klein.

"It's important that physicians be able to recognize the signs of depression in order to treat their patients. Once a physician acquires the experience necessary to prescribe antidepressants, he may be able to help some of his patients who may resist the suggestion to see a psychiatrist," says Dr. Klein.

"In the past, psychiatry has emphasized intensive psychotherapy, but many patients just won't accept this or even need it. The use of medications to treat depression is one tool of many to help patients."



Marvin Nalick

Dr. Donald Klein

WHEN MEDICATIONS FAIL, ECT MAY HELP SOME PATIENTS

When patients who are depressed fail to respond to medications, electroconvulsive treatment (ECT) may be recommended.

"ECT is the most powerful antidepressant we have," says Dr. Harold Sackeim, lecturer in psychiatry at P & S and Deputy Chief of the Department of Biological Psychiatry at the New York State Psychiatric Institute.

"After undergoing ECT, a large number of patients return to their jobs and families within a week with few or no symptoms," says Dr. Sackeim.

ARTIST RETURNS TO CREATIVE, PRODUCTIVE CAREER AFTER ECT THERAPY

An artist who gradually went from a normally communicative person to an isolated, withdrawn woman underwent ECT for depression.

"The depression just hit me suddenly. It affected me so deeply that I had to be hospitalized. The medications and psychotherapy had no effect. By that time, I didn't care about anything in my life. When ECT was recommended, I was a little afraid, but barely — nothing at all seemed to matter," she recalls.

During her depression, she took to wearing dark glasses at all times and dark clothing. She grew her bangs long so that her eyes were shielded from the rest of the world. Her voice was barely audible when she spoke.

"After three sessions of ECT, I had some memory loss, and even though that was a bit frustrating, the difference in me was incredible. It was as if a black veil had been lifted from me," the artist reports.

"I didn't want to wear the dark glasses any more and I began to talk again. I went right back to work and I feel productive once again."

ECT PRODUCES BRAIN SEIZURES AS IT DISPELS DEPRESSION

However, ECT is controversial because it produces a controlled seizure in the brain, similar to those that occur spontaneously in epilepsy. Doctors place two electrodes on a patient's head and then generate a small electric current about one second long.

"Only a fraction of this current reaches the brain because most of it is

deflected by the skull. The current excites neural tissue and triggers a seizure that lasts about a minute. Without a seizure, ECT is ineffective," Dr. Sackeim explains.

Studies here of ECT and depression point to a failure of an electrical circuit in the brain, resulting in an overexcitement of one area that produces depression, surmises Dr. Sackeim.

A patient who is severely depressed receives ECT therapy three times a week for two to four weeks.

"When ECT is administered properly to the right patients, it can end a person's depression."

THERE'S A BIG DIFFERENCE BETWEEN EXTREME ANXIETY AND PANIC ATTACKS

Anxiety afflicts much of the population at various times, usually because a person is under stress or threatened in some way. Anxiety is a state in which a person anticipates something adverse is about to happen.

Extreme anxiety often is confused with panic attacks, a situation in which a person suddenly feels terrified and incapacitated for no apparent reason. Dr. Klein discovered that antidepressant medications can have dramatic effects in patients who suffer spontaneous panic attacks.

A woman who was a top realty agent and began to have panic attacks is back to work now after visiting the Anxiety Clinic here for treatment.

Her attacks began without warning: On her way through the crowded lobby of her office building one morning, the woman suddenly felt her heart pounding, shortness of breath, nausea and an overall feeling of dread and panic. Within a one-month span, a repeat panic attack occurred two more times in the huge lobby.

PANIC ATTACKS LED TO FEAR, EVENTUALLY TO RECLUSIVE LIVING

Soon, she feared crossing the lobby. She wondered if she'd fear going to work, much less showing residences to clients.

The agent suddenly became reclusive and dreaded her job. Friends who had read an article about people who quake at going out in fear of suffering a panic attack — agoraphobia — encouraged her to seek help.

After visiting the Anxiety Clinic at CPMC, she began to take medications that helped her to overcome her "panics," says Dr. Klein.

Psychiatric researchers have found that panic attacks and the phobias that often follow appear to be set off by a biochemical abnormality — not by an emotional disorder, reports Dr. Klein.

The drugs used to stop panic attacks are tricyclic antidepressants and monoamine oxidase (MAO) inhibitors. Both of these drugs affect the neurotransmitter norepinephrine.

"More than a third of the patients who suffer panic attacks just need medication and an explanation of their disorder. Then the panics disappear," says Dr. Klein. "Another group needs a great deal of support from their families and friends as they overcome their anticipatory fear of a panic attack. The remaining group of patients needs professional therapy as well as medication." ■

The Melancholie —
engraving by Albrecht Durer.

The Bettmann Archive

WHILE THE BODY SLEEPS, THE BRAIN TOILS

The Bettmann Archive

Sculptured head of Hypnos, the winged god of sleep.

". . . the innocent sleep,
Sleep that knits up the ravel'd
sleave of care,
The death of each day's life,
sore labor's bath,
Balm of hurt minds, great nature's
second course,
Chief nourisher in life's feast."
— William Shakespeare

For most people, sleep is the great restorer — a time to relieve the mind from the day's travails and renew the body to meet a new day.

But for more than 15 percent of the population, sleep is an ordeal that poses a potential threat to marriages, careers and well-being.

The body needs sleep as much as it needs food and water. Why sleep is so important is not clear. People with sleep disorders may start off just as healthy as those who sleep peacefully, but after a while, they tend to be irritable, less alert, moody, lethargic and unable to concentrate.

DURING SLEEP, THE BODY REPAIRS ITSELF

"Sleep is a time of physiological repair — much like refilling the reservoir," says Dr. Neil B. Kavey, director of the Sleep Disorders Center at The Presbyterian Hospital.

But while the body sleeps, the brain is busy at work. "The brain and the body, especially the heart and lungs, may be more active in sleep than during wakefulness," adds the psychiatrist and specialist in sleep disorders medicine.

The role of sleep disorders in health is a growing area of interest in medicine. "There are neurological, psychological, cardiac, pulmonary and many other factors at play which have a significant impact on sleep, and on which sleep has an impact," he says.

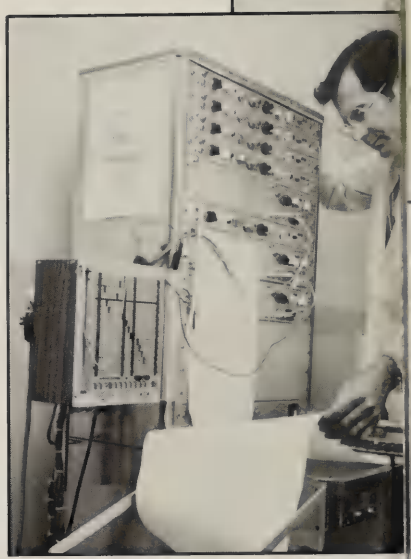
When a person gets sleepy, there appears to be a complex interaction of chemical substances in the brain.

DOCTORS INVESTIGATE IRREGULAR BEHAVIOR THAT OCCURS IN SLEEP

At Columbia-Presbyterian Medical Center, Dr. Kavey is working with neurologists to learn more about irregular forms of behavior that occur during sleep, such as walking, screaming and seizures.

One sleep disorder — restless legs syndrome — is characterized by a restless, agitated feeling before going to bed. Because this disorder was thought to be anxiety, patients with this problem usually were given anti-anxiety medications. "But this is a neurological disorder, not a phobia of sleep," explains Dr. Kavey, who also is an associate professor of psychiatry at Columbia University's College of Physicians & Surgeons.

He cites the case of a 42-year-old man with this syndrome who in addition to his restlessness and insomnia, felt tired, stressed and unable to cope with the day. Following diagnosis and treatment, he reported that he was "a new man. I feel awake, alive, jovial and I want to socialize again."

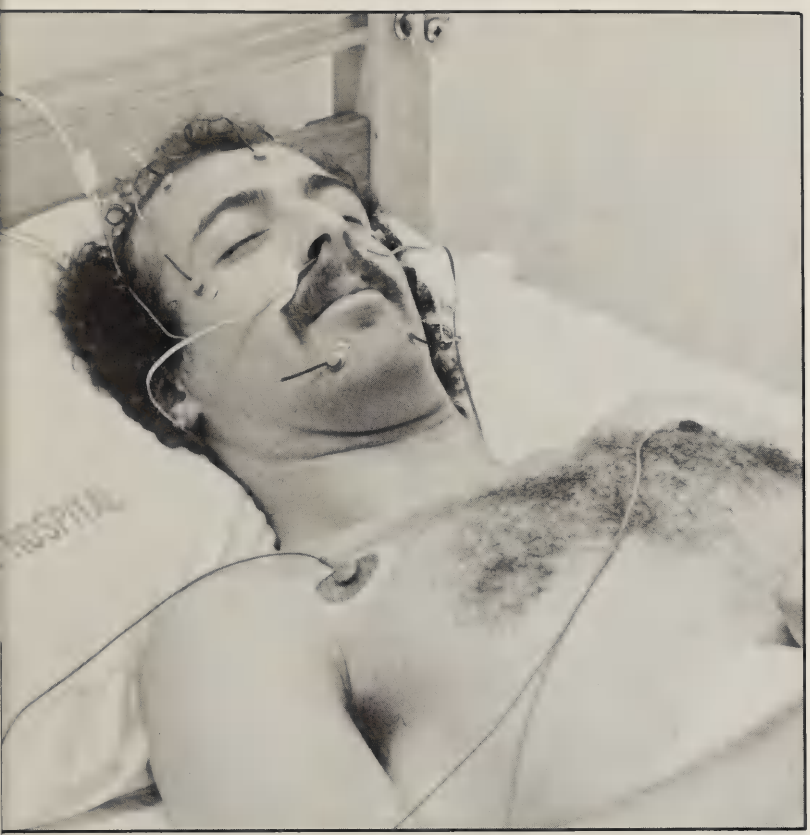


Dr. Neil B. Kavey checks a data recording wh undergoes an overnight sleep study.

When doctors here correct a sleep disorder for a patient, they usually remedy related problems for the spouse.

EXECUTIVE REBUILDS HIS LIFE AFTER CORRECTING SLEEP DISORDER

For instance, an executive was bothered by daytime tiredness, moodi-



Joel Landau

ness and a feeling of depression which was taking an increasingly significant toll on his job and personal life. Also, his snoring had his wife at wit's end. He began psychotherapy and his therapist, after a reasonable period of time, felt that his sleepiness should have disappeared.

After coming to the Sleep Disorders Center here, he was diagnosed as having sleep apnea — in which breathing stops for 10-60 seconds many times throughout the night. Because breathing ceases briefly, the person unwittingly awakens frequently throughout the night to resume air intake. As this occurs, it produces snoring.

"Treatment of this man's sleep apnea led to a total resolution of the problem within a week and he rebuilt his life," says Dr. Kavey.

"There's a gray area between neurology and psychiatry in some sleep disorders," says Dr. Kavey. "We are defining and classifying disorders so that we can be more accurate and effective with treatment."

The center also works with in-patients at Presbyterian. Undetected sleep disorders can cause certain conditions, such as cardio-pulmonary disorders, to worsen without explanation. "If doctors feel there is a problem, they call us and we wheel the portable equipment to the patient's bedside and do sleep studies. Brain waves, body movement, heart and breathing rates and blood oxygen are monitored," says Dr. Kavey.

Presbyterian is the only hospital in the country that can monitor sleep at a patient's bedside.

THE FIVE STAGES OF SLEEP CULMINATE IN "REM" SLEEP

"Brain waves in sleep are different from those that occur during wakefulness. The brain switches into an organized, five-stage cycling process during sleep which culminates in REM (rapid eye movement) sleep, during which most dreaming occurs."

In REM sleep, the eyes dart back and forth and up and down. The middle ear vibrates. Breathing and heart rate may accelerate. Some sleepers have increased secretion of acid in their stomachs or heightened blood pressure.

"Usually, these changes have no relation to the content of the dream, and instead are part of the physiological effect of REM sleep," says Dr. Kavey.

DISORGANIZATION OCCURS BY NOT LIVING BY ONE'S INNER CLOCK

The body's sleep/wake mechanism also has complex stages. "Our bodies don't just get depleted and fall asleep. The body has its own inner clock that is set on a sleep/wake cycle known as a circadian rhythm. Sleep organizes all of these rhythms — the undulations of heart rate, brain waves, body temperature, hormone release, immune response," says Dr. Kavey.

"If the body's clock is set for sleep, but the person stays awake, the result is a decrease in effective functioning," he notes. "This is not just from sleep loss, but from a disorganization of circadian rhythms."

When people with circadian rhythm disruptions visit the center, Dr. Kavey and his staff reset their clocks and organize each person to better deal with travel that requires time zone changes, shift changes at work and consumption of medications that might alter their inner clocks.

"Some patients are locked into a highly disorganized pattern. We give them a program to follow until they reach the level of organization that enables them to feel rested, alert and capable of performing at their maximum. Soon, their sleep/wake cycles are back in sync with their normal body clock rhythms. But, we also make sure that no other sleep disorders contribute to the problem," adds Dr. Kavey.

DOCTORS SEEK TO UNRAVEL THE MYSTERY OF SLEEP

"Things can go haywire during sleep, because it is such an active time for the brain and the body. Disease processes are active and in some cases, may be worsened," says Dr. Kavey.

"The relationship of sleep to health and disease is one of the important areas at the forefront of modern medicine. The Sleep Disorders Center at Columbia-Presbyterian Medical Center was created to learn even more about the mystery of sleep and how it affects people's lives."

CPMC RESEARCHERS SEEK A WAY TO TREAT AND PREVENT SCHIZOPHRENIA

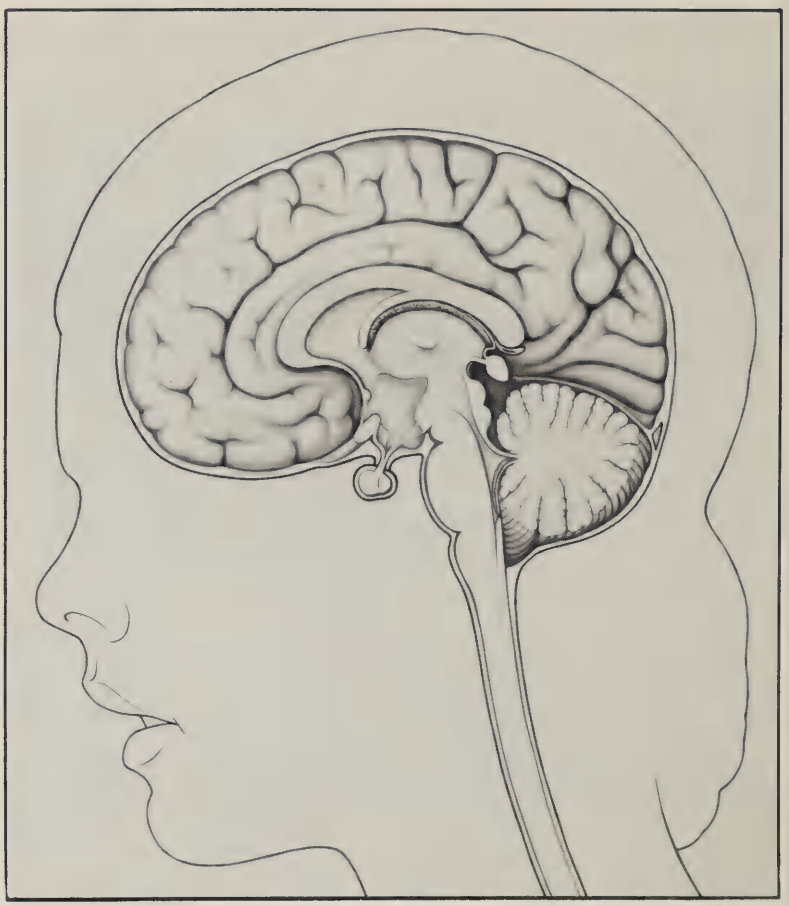
Michael had everything going for him. Good grades. A sense of independence, understanding and compassion for his divorced mom, the ability to act as a father figure to his younger brother and sister, a willingness to help out with extra chores at home because his mom often worked long hours.

Michael (not his real name) had a conscientious attitude since he was 8, when his father left the family. He rarely went out with his friends from school, he did his homework without prodding and he rode herd on his brother and sister to make sure they did their assignments.

When he turned 17, his mother noticed a gradual change in his personality:

"First, he became withdrawn, then he let all of his friendships lapse, and his grades went from A's to C's. Eventually, his marks dropped to D's.

"Then, Michael started watching TV continually and stopped going to school. He became resentful that his brother and sister were socializing and having fun as young adolescents. Soon, he stopped talking to them."



Robert J. Demarest

Many schizophrenia patients have mild to moderate degrees of atrophy in the cerebral cortex, one of the major structures in the brain.

REFLECTIONS OF A NEW FACE PLAGUE MICHAEL

As his behavior began to change, Michael often stopped at every mirror at home, looked at his face and moaned.

"He kept asking me to buy him a different pair of glasses and I couldn't understand why," his mother said. "It turns out that he would see his face elongated, puffed out, or somehow grotesque every time he gazed into a mirror. Later, he said he thought he could make his face different by changing the glasses.

"Michael heard voices when he looked into the mirror. They told him, 'You're ugly.' By then, he associated not having any friends with being ugly and the voices he heard confirmed this."

After missing months of school, and refusing to talk with his guidance counselors, the teen-ager was hospitalized in a psychiatric unit at The Presbyterian Hospital at Columbia-Presbyterian Medical Center.

He was given medications for what was diagnosed as schizophrenia, but at first he failed to respond to them. Soon the "voices" he heard began to tell him to end his life.

But within three months, the prescribed medications began to work for Michael.

Eventually, Michael returned to school, although he only went to class a few days a week. He lived in a halfway house and was placed in a part-time job. Now, he is back at home, working part-time and taking courses at a community college.

MICHAEL CAN BE MANAGED MEDICALLY, BUT NOT COMPLETELY CURED

Although Michael's schizophrenic symptoms can be managed with medications, his illness usually cannot be cured.

"Schizophrenia is a lifelong disorder," says Dr. Ronald O. Rieder, associate attending psychiatrist and Director of Residency Training in Psychiatry at The Presbyterian Hospital.

"The families of schizophrenic patients struggle in much the same way as the families of Alzheimer's patients. These patients are hard to live with — they don't conform to social amenities and they tend to develop suspicious ideas about the most benign things," says Dr. Rieder.

"Even when taking medication, schizophrenic patients may still have significant symptoms. Among these are difficulty in adapting to the social environment and to the demands of a job. These patients often can't develop comfortable social relationships, and so they become isolated and fearful. They may lack the motivation and cognitive capacities to work effectively.

Schizophrenic disorders are characterized by delusions, hallucinations, strange behavior and a decreased ability to function. A schizophrenic patient may be severely impaired in his ability to perform even basic activities

of daily living, such as personal hygiene, or he may just be a bit peculiar, such as the town eccentric.

This disorder can occur in an acute or chronic form. Acute schizophrenia often is triggered by a stressful event in a person's life. This form tends to improve significantly with psychotherapy and medication.

Chronic schizophrenia follows a more insidious course, as in Michael's case. The personality slowly transforms and deteriorates. Persistent hallucinations and delusions dominate the person's reality.

SCHIZOPHRENIA: PSYCHOLOGICAL OR PHYSICAL IN ORIGIN?

As doctors seek to learn more about schizophrenia, they are asking whether schizophrenia is a psychological disturbance or a physical illness which affects only certain brain processes.

"There is increasing evidence that schizophrenia is as much a medical illness with an understandable physiological component as it is psychological," says Dr. Rieder, who is also associate professor of clinical psychiatry at the Columbia University College of Physicians & Surgeons.

Doctors treat schizophrenic patients with antipsychotic drugs which block the transmission of the neurotransmitter dopamine. When dopamine is released from one nerve cell, it crosses a tiny gap across the nerve called the synapse, gives a signal and stimulates the adjoining neuron. Medications used to treat schizophrenia eventually suppress the activity of the brain's dopamine neurons. These medications can lessen a patient's symptoms, but they cannot cure schizophrenia.

"It is possible that there is a neurological disorder in schizophrenia," says Dr. Rieder. "We find that many schizophrenic patients have mild to moderate degrees of atrophy in the cerebral cortex. These abnormalities are apparent on CT scans. We don't know why this abnormality occurs — it could be the death of cells or it could be a less permanent disruption of neurons."

RESEARCHERS PROBE THE GENETIC LINK IN SCHIZOPHRENIA

More than 40 years ago, genetic studies of schizophrenia at CPMC established the existence of a genetic predisposition to the disorder.

"Scientists are now trying to trace the major genes involved in schizophrenia and identify the markers. The markers on each cell serve as 'identification cards' inside the body. When a certain disease marker is present, that person has a greater risk of getting that disease," says Dr. Rieder.

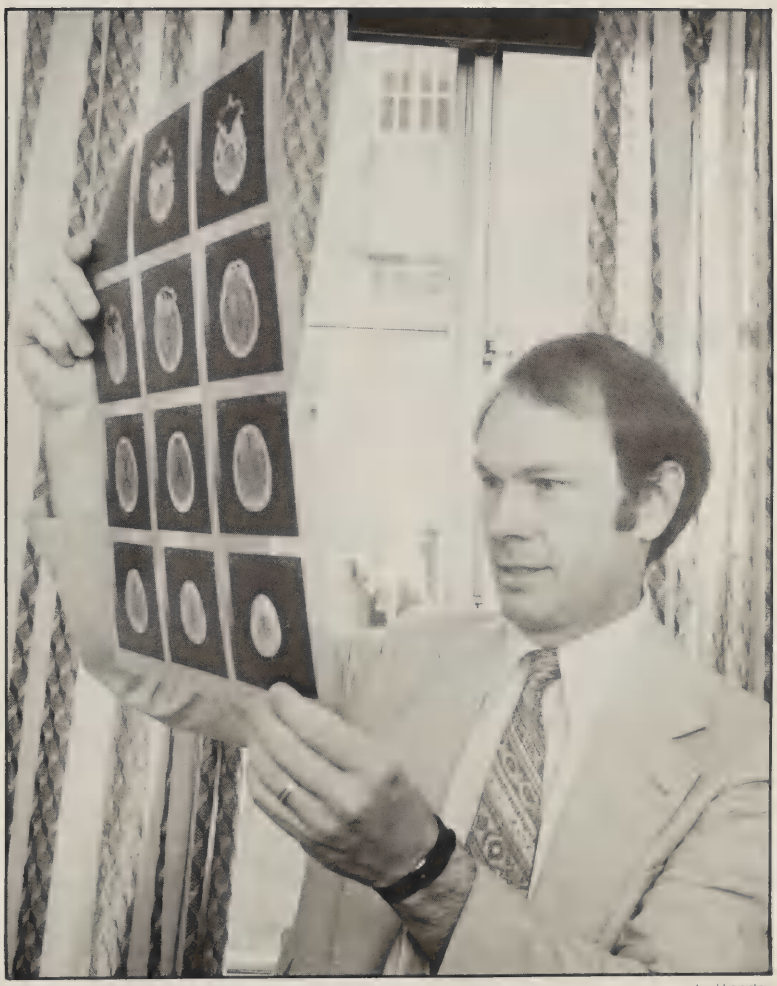
The genes within the nucleus of each cell contain the information the body needs to function in all areas — from the manufacture of proteins vital to life to the production of chemicals that affect behavior.

"We're trying to find a gene that's related to schizophrenia and learn the gene's coding — that is, what instructions it gives the body."

THE SEARCH IS ON FOR A GENE THAT AFFECTS SCHIZOPHRENIC BEHAVIOR

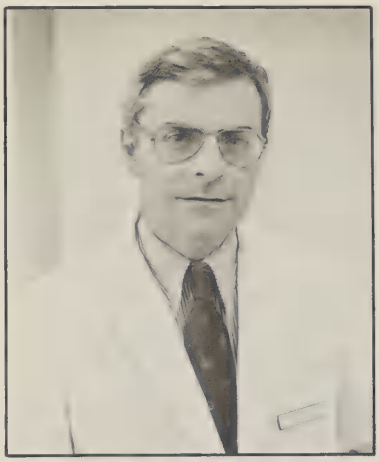
Attending psychiatrist Dr. John D. Rainer, director of the Department of Medical Genetics at PI, and professor of clinical psychiatry at P & S, explains: "We are looking at behavior that stems from a genetic predisposition. To do this, we are exploring a new laboratory technology which enables scientists to isolate fragments of DNA (genetic material).

"These fragments may serve as markers on the chromosome and enable us to close in on a gene that affects schizophrenic behavior. This technique will also be used to study other psychiatric disorders, such as manic-depressive psychosis. If we can find such a gene, we will learn more about the chemistry of the illness and find new and better methods of treatment."



Joel Landau

Dr. Ronald O. Rieder studies CT scans for signs of cortical atrophy.



Dr. Frederick Kass Joel Landau

"For many years, the Psychiatry Service at The Presbyterian Hospital has been committed to quality patient care for the residents of Washington Heights. The Hispanic Clinic and the Crisis Intervention Unit are examples of our attempts to meet the special needs of the community. We are fortunate to have a dedicated professional staff to carry this out."

— Dr. Frederick Kass,
Director of Adult Psychiatry

SPECIAL TEAM TALKS "THE RIGHT LANGUAGE" IN SERVING THE HISPANIC COMMUNITY

Dr. Rafael Tavares and receptionist Elba Martinez with patient charts at the Hispanic Psychiatry Clinic.

Joel Landau

In psychotherapy, the choice of words is telling. Words used or misused, tone of voice, facial expression and body language accompanying them give the therapist essential information about a patient's state of mind.

"Psychiatric treatment needs to be conducted in the same language the patient speaks," says Dr. Rafael Tavares, director of the Hispanic Psychiatry Clinic at The Presbyterian Hospital.

The number of Spanish-speaking residents in the neighborhood surrounding Columbia-Presbyterian Medical Center doubled between 1970 and 1980. To meet the needs of the growing Hispanic population, the hospital created a Hispanic psychiatry program which has served as a model for other communities, according to Dr. Tavares.

"It's difficult to do psychotherapy or even evaluate a patient via translation. In an emergency, yes, but not for ongoing treatment," the psychiatrist explains.

There's always a chance that the translation may be inaccurate or that a nuance may be lost. As a result, information that is vital for diagnosis and treatment may lead to an overestimation or underestimation of the problem.

Language communicates more than an individual's experience. It also conveys an individual's cultural traditions and moral values, which, in turn, affect his behavior.

"It's essential for a therapist to be sensitive and aware of the nuances conveyed by language," says Dr. Tavares. "Spanish-speaking people have unique cultural values, which the staff shares and incorporates in treating patients at the Hispanic Clinic."

The service is the only one in a teaching hospital in New York City that is fully oriented toward the Hispanic population, says Dr. Tavares:

"The clinic's existence is a recognition on the part of the hospital that the Hispanic community has special needs for support and treatment of their emotional problems."

CRISIS INTERVENTION TEAM STEPS IN WHEN CONFLICTS NEED IMMEDIATE ATTENTION

Joel Landau

Dr. Paula Eagle, director of Adult Outpatient Psychiatry Services at Presbyterian.

The 16-month-old infant had been a patient in the Pediatric Intensive Care Unit for several weeks. Her mother visited regularly, but refused to cooperate with the staff, especially with a social worker who was trying to place her young daughter in a specialized institution where she would be able to receive proper long-term care for her severe handicaps.

One night, the mother became agitated and began screaming in the ICU. A psychiatrist was called in and he referred the woman to the Crisis Intervention team.

After the woman talked with a member of the team in the Emergency Room at The Presbyterian Hospital, it was learned that her family practically was falling apart. Her children were beginning to take drugs and drop out of school. Although her husband was supportive, he was unable to calm down his wife.

"This woman couldn't wait for a regular appointment in the clinic," says Dr. Paula Eagle, director of Adult Outpatient Services at Presbyterian. "We scheduled an appointment for her with a psychiatrist for the next day."

WOMAN FELT OVERWHELMED BY HER PERSONAL TRAGEDY

During her first session with the Crisis Service, the staff psychiatrist found that the woman was preoccupied with legal matters. Meantime, her family was crumbling.

"She couldn't deal with the reality of her severely handicapped child. To avoid dealing with her own tragedy, she immersed herself in legal matters regarding her daughter," says Dr. Eagle.

After opening up to the psychiatrist, the woman started to cry. Her husband was called in and offered more support.

"Within two weeks, the kids were back in school and the mother was dealing with things in her life," says Dr. Eagle. "She learned that even if her daughter had to be placed in a hospital permanently, that she would not be excluded from the decisions relating to the infant's care."

Thanks to a successful intervention, the family is striving to become a cohesive unit again. "The team began to see this family two weeks ago, and the woman and her family understand the problem. They know they must deal with the impact of the crisis and work toward a resolution of the conflict. The goal is to get the patient functioning in his life as soon as possible. Crisis intervention is short-term by definition," says Dr. Eagle.

PATIENT MUST UNDERSTAND THE PROBLEM IN ORDER TO RESOLVE IT

If only the physical ills are tended to, the problem is likely to recur. "It's important to get the patient to understand the conflicts that led to the impulsive behavior. This way, he can have better control over his actions in the future," says the psychiatrist.

After patients are evaluated, they are referred for treatment. "Once they begin therapy, they learn better ways of coping with stress. It's important because, otherwise, the negative behavior becomes a repetitive pattern," says Dr. Eagle.

"Many patients land in the Emergency Room because they cannot gain a rational perspective on their problems and they lose control of their feelings. By seeing the patient the next day, the crisis intervention team works to begin to help the patient calm down and help him understand what is causing his distress."

CRISIS TEAM SEES PATIENTS IN A TRANQUIL SETTING

The team, which consists of a psychiatrist, psychologist, psychiatric nurse and a social worker, sees its patients in an area far removed from the chaos of the Emergency Room. "The setting is more low-key, which enables the patient to begin reflecting on his difficulties," says Dr. Eagle.

In Washington Heights, there has been a dearth of in-patient and outpatient services since four community hospitals closed in the last 10 years. Presbyterian has the only psychiatric emergency room in Northern Manhattan, which has more than 250,000 residents. Because the need has been so great, the Hospital has provided more acute psychiatric services.

The crisis intervention team bridges the gap between in-patient and outpatient care by treating patients who are emotionally ill, but don't need to be hospitalized.

SPECIAL CLINIC ADDRESSES CHILDHOOD DEPRESSION, ADOLESCENT SUICIDE

Depression and suicide are words rarely associated with childhood and youth. The word "carefree" seems much more applicable.

But the prevalence of childhood depression and teen-age suicide is greater than is generally recognized. Unlike adults who may find it easier to communicate their feelings, some youngsters lack the ability to express any negative experiences that are affecting them.

"Kids have real-life problems that cause them to be depressed. The reasons are many — parents who are constantly in conflict or academic problems that cause them to fall behind their classmates," says Dr. Paul D. Trautman, director of the Child and Adolescent Depression and Suicidal Disorders Clinic at The Presbyterian Hospital.

The clinic, the only treatment center of its kind in the New York City area, evaluates and treats depression in children. Since opening in January 1984, the clinic now averages 170 to 180 patient visits a month. The clinic at Presbyterian is staffed by doctors trained at the Research Clinic for Childhood Depression at the New York State Psychiatric Institute, part of the Columbia-Presbyterian Medical Center.

The diagnosis of depression in children is relatively new. In the past, the symptoms of depression in children either were overlooked or dismissed. Instead, the youngsters were diagnosed as hyperactive or as having a conduct or anxiety disorder.

NO ONE EVER BOTHERED TO ASK CHILDREN HOW THEY FELT

"People never asked how they felt," says Dr. Trautman. "A lot of children who are depressed are irritable and lose interest in their friends and activities. Some children who go untreated get into a pattern of failure. Their grades fall off and the more they get behind, the more depressed they get.

"Children who fall into such a state of depression miss out on an important phase of development," he notes. "They fail to establish relationships outside the family circle. Then, as adults, they're also likely to be isolated and depressed."

DOCTORS USE ADVANCED DIAGNOSTIC TECHNIQUES

The clinic uses the latest diagnostic techniques to assess each patient. In some cases, depression appears to have a biochemical basis. Depressed children are more likely to have a family history of depression and alcoholism than children with other kinds of problems or normal children. For this reason, some children are treated with anti-depressant medications, as well as with psychotherapy.

"Psychotherapy is of great value here. Our young patients may be having difficulties in their relationships with friends, teachers or parents. In helping kids identify their problems, the clinic staff offers support and suggestions on how they can improve their lives," says Dr. Trautman. "Kids make changes more readily than adults and are more responsive to changes in their environment."

For instance, a therapist might suggest that a child and his parent do something mutually enjoyable together, or just sit down to talk for a few minutes each day. "Doing something pleasant instead of arguing puts the relationship on another footing," he explains.

YOUNGSTERS LEARN STRATEGIES TO RESPOND BETTER TO ACUTE STRESS

Dr. Trautman is studying the use of a technique called cognitive therapy in

PSYCHIATRY TEAM VISITS SCHOOLS AND HELPS STUDENT

Pediatric psychiatric nurse clinician Claudette Bourque is part of a team that brings mental health care to children in city schools.

Joel Landau

Instead of showing up for her classes, a 10-year-old schoolgirl often wandered around the hallways. Her family was inattentive, so she sought negative attention at school.

Her guidance counselor referred her to the Alternative Services Program for weekly sessions with a therapist. The mental health program, run by the Division of Child Psychiatry at The Presbyterian Hospital, serves four public schools in Washington Heights, (School District 6), which has the lowest reading scores and is one of the most overcrowded districts in New York.

"My mother always puts me down," the youngster told pediatric psychiatric nurse clinician Claudette Bourque. "Last weekend, there wasn't enough money to buy food. My sister teased me all the time and my mom always sticks up for her. My mom never listens to what I have to say. She just tells me that I'm a problem for her."

his work with a group of youngsters who have attempted suicide. "We teach the kids to identify the negative thoughts that lead to the depressed feeling and maladaptive behavior and to use problem-solving strategies that may help them respond better when they feel hopeless, trapped or depressed."

Joel Landau

A teen-age girl visits Dr. Paul D. Trautman weekly as part of her treatment for depression.

Researchers have found that most adolescents who attempt suicide aren't depressed. "They're reacting to acute crises in their lives — such as failing an exam or a fight with their parents," says Dr. Trautman, who is also an assistant professor of clinical psychiatry at Columbia University's College of Physicians & Surgeons.

"These are serious events for kids. They get upset and do the first thing that comes to mind. They often don't really want to die. It's a way of getting back at a parent, or making another person angry and punishing themselves, too.

"Every suicide attempt communicates to others by saying: 'I'm unhappy. I need help and I'm being ignored.' It's also partly to induce guilt — to motivate others to action."

MOTHER AND DAUGHTER IMPROVE RELATIONSHIP AFTER SUICIDE ATTEMPT

A 14-year-old girl who attempted suicide told Dr. Trautman: "I just wanted someone to listen to me and understand how I felt."

The girl's mother was concerned, but she had an overbearing manner. "We disagreed about almost everything, especially dating, hours, chores and homework," the teen-ager said. "That day I took the pills, I had an argument with my mom, my friends teased me and I had a fight with my boyfriend. It was too much, so I noticed my sister's pills in the medicine cabinet and took them without thinking. My family found me a little while later. I was having seizures when they took me to the hospital."

After that episode, the mother and daughter saw Dr. Trautman weekly for three months. He encouraged them to make contracts with each other about rules and privileges and to take time to understand one another's feelings and point of view.

"That suicide attempt brought things to a head. The relationship improved as a result. The daughter is much happier and the mother is less exhausted and depressed. Her own self-image improved," explains Dr. Trautman.

"Very often, an adolescent who makes one suicide attempt will try it again," says Dr. Trautman. "For these kids, family therapy is important. We must get both child and parent talking and listening to each other in a new way."

TURN THEIR GRADES, LIVES AROUND

After a few months of regular sessions each week, the girl made a virtual turnaround, says Ms. Bourque. "She's a bright, but shy child. She was below the reading level for fifth grade when she first began therapy. Since then, she has practically moved up to a seventh-grade level.

"She's also learned to better control her anger. When she feels that she's going to get angry, she counts to 20 instead of fighting or using obscene language. As a result, she gets along with her classmates much better. This little girl has come a long way."

In a note to Ms. Bourque, the child wrote: "Thank you very much for your help. I like you like a mother."

"Children like this are needy in terms of having someone to care about their lives. Positive reinforcement from her therapist enabled her to do much better in school and to improve her relationship with her parents," says Dr. Carmen Alonso, director of the program.

Dr. Alonso and the three members who make up the bilingual team go from school to school to see the children with behavioral problems. The team sees any children that the school considers to be in need of help.

"When we get there, we just knock on the classroom door and the teacher excuses the child from class. There's no office for us, so we see the children in shower rooms, foyers and book closets — anyplace where we can find a little privacy," she says.

CHILDREN COUNSELED INCLUDE LONERS AND CHILD ABUSE VICTIMS

The children they counsel include youngsters who are depressed, loners who don't know how to relate to other children, hyperactive children and the silent victims of child abuse.

After a child receives a complete mental health evaluation with parental approval, he sees the therapist once or twice a week. In some cases, home visits are scheduled.

THERAPY GIVES CHILD A BETTER SELF-IMAGE AND ENCOURAGEMENT

"We'd like to give these children a working chance to succeed within the school system. The therapeutic program affords these youngsters greater self-esteem, as well as a sense that they have some control over their lives and that they can aspire to higher goals as they mature. It's important that we break any sense of failure before it becomes ingrained," says Dr. Alonso.

The Division of Child Psychiatry found that many referrals to the Psychiatry Clinic from the public schools fail to show up for their appointments, says Dr. Alonso. "This program serves the community by taking mental health care to the children who might not find care on their own." ■

EATING DISORDERS: WHEN FOOD BECOMES MORE THAN A CONSUMING PASSION

This eater sweeps up handsful of pie for a secret eating binge.

Joel Landau

When Freeda was a college senior, she was caught shoplifting in a grocery store near campus. After graduation, she became a clerk for a shipping company instead of going on for her M.B.A.

Freeda's salary covers her bills and basic essentials. But it's not enough to cover the $200 tab she racks up weekly to indulge her favorite pursuit: binge eating. "To help keep myself in food, I sneak money from the office petty cash fund," says Freeda (not her real name).

About three times a week, the 22-year-old consumes thousands of calories at a sitting, then induces vomiting so that she won't gain weight. Although Freeda is attractive, her skin has a wan appearance. She has no social life. "It's difficult to deal with friends, so I've eliminated most of them," says Freeda. "Once in a while, I talk with them on the phone. Other than work and food shopping, I mostly stay home alone." Freeda has bulimia, which is a pattern of episodes of binge eating.

"Eating disorders are much like an addiction. They can ruin lives physically. When a person binges and then purges, the acid from vomit can ruin teeth and cause the body to lose essential fluids. It also can cause irregular heart beats and kidney damage," says Dr. B. Timothy Walsh, associate attending psychiatrist at The Presbyterian Hospital.

Another condition, anorexia nervosa, is an illness that reflects a fear of becoming fat. Anorexia leads to relentless dieting, an increase in physical activity to stay slim and serious weight loss.

EATING DISORDERS AFFECT YOUNG WOMEN IN PURSUIT OF THINNESS

Both disorders tend to affect young women. Five to 10 percent of anorexics eventually die from the disorder.

"Anorexia often begins with a woman who is a few pounds overweight and succeeds in losing a few pounds. Then the momentum builds. She feels better and decides the weight loss is something she needs to continue. This cycle soon begins to have a spiral effect. The victim may say, 'I know I'm thin, but I'm not thin enough,' " says Dr. Walsh.

Eating disorders such as these dominate the lives of these patients. Life becomes narrowed to the pursuit of food or the pursuit of thinness. "Life becomes narrowed to the exclusion of people and this can affect a person's career," says the psychiatrist.

When doctors ask patients what triggers a binge, most of them admit that an unpleasant emotional state got them to think about food, to eat and to induce vomiting.

"They find their behavior abhorrent, yet it provides relief for their emotions," Dr. Walsh explains. "It's a way of suppressing an unpleasant emotional state. It's a use of behavior to quell certain emotions — a person eats, binges and feels less anxious."

CPMC RESEARCHERS ASK: IS BIOLOGY THE BASIS OF BULIMIA?

Researchers at Columbia-Presbyterian Medical Center are asking whether there is a biological link in bulimia. "These patients use food the way addicts use alcohol or morphine. We're asking whether food is affecting their bodies in the same manner as addictive drugs," says Dr. Walsh, who is also associate professor of clinical psychiatry at the Columbia University College of Physicians & Surgeons.

"Studies have shown that various forms of addiction can be treated by an agent which affects the way the brain uses the neurotransmitter norepinephrine," says Dr. Walsh.

When hospitalization is required, some anorexics have lost so much

continued on next page

IN MEMORIAM

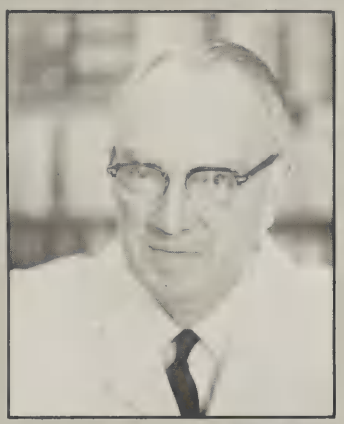
DR. HOWARD C. TAYLOR JR.

Dr. Howard C. Taylor Jr., former director of the Obstetrical/Gynecological Service at The Presbyterian Hospital from 1946 to 1965 died on March 22.

Dr. Taylor was born on February 17, 1900 in New York City.

Dr. Taylor influenced the field of obstetrics and gynecology from the 1940's through the '70's. He made pioneering discoveries in such areas as ovarian and endometrial cancer, breast cancer, toxemia of pregnancy, the role of estrogens in clinical medicine, pelvic congestion, social obstetrics and in population and family planning.

He was one of the first medical academicians to recognize population growth, particularly in developing countries, as one of the world's most complex important problems and one in which obstetricians and gynecologists had a major role to play. Dr. Taylor's concept of the integration of maternity care and family planning was ahead of its time and remains of tremendous significance to the developing world.



Elizabeth Wilcox

Dr. Taylor

He held the position of professor and chairman of the Department of Obstetrics and Gynecology at P & S from 1946 to 1965. Dr. Taylor was appointed Rappleye Professor Emeritus of Obstetrics and Gynecology in 1965.

Dr. Taylor was director of the International Institute for the Study of Human Reproduction at Columbia-Presbyterian Medical Center from 1965 to 1970.

In 1954, he was presented with the Albert Lasker Award of the Planned Parenthood Federation of America. Dr. Taylor received the Clement Cleveland Award of the New York City Cancer Society in 1964.

Dr. Taylor served as president of the American College of Obstetricians and Gynecologists, the American Cancer Society and the American Gynecologic Society. From 1953 to 1969, Dr. Taylor was editor-in-chief of the American Journal of Obstetrics and Gynecology.

He received his M.D. from the Columbia University College of Physicians & Surgeons in 1924. He performed his surgical and gynecological internships at the Roosevelt Hospital in New York from 1924-26 and his obstetrical house surgeonship from the New York Lying-In Hospital in 1927.

He is survived by his wife, Caroline, and three children. ■

DR. GEORGE B. AMBROSE

Dr. George B. Ambrose, attending orthopedic surgeon at The Presbyterian Hospital, died on April 29.

Dr. Ambrose, 65, was a native of New York City. After earning his A.B. degree from Columbia College in 1940, he received his M.D. from the Columbia University College of Physicians & Surgeons in 1943.

He served his internship at Kings County Hospital, New York. He served his residency training at Norwegian Hospital and Kings County Hospital in New York. Dr. Ambrose performed part of his residency at Madigan General Hospital, Fort Lewis, Washington, while on active duty with the U.S. Army.

He completed his training as an orthopedic and fracture assistant and his senior residency at P & S. In 1953, he joined the PH staff as an assistant attending orthopedic surgeon. Dr. Ambrose was named an attending physician in 1971. He also was associate professor of clinical orthopedic surgery at P & S. ■

EATING DISORDERS

continued from page 16

weight that emergency treatment is necessary to prevent death. Doctors and nurses focus first on keeping the patient alive by restoring the weight that has been lost. After the body's supply of nutrients has been replenished, psychotherapy begins.

Many anorexic patients who are hospitalized and treated usually make a full recovery.

"The treatment team needs to be familiar with all of the eating disorders and equipped to carry out treatment," says Dr. Walsh. "The essential ingredient for adequate treatment rests on the nursing staff," says Dr. Walsh. "The nurses spend meal times with patients and calm their anxieties."

Patients with anorexia nervosa and bulimia are treated in several units at the Medical Center, including the adult psychiatry units, the research unit at the New York State Psychiatric Unit and at the Babies Hospital division of Presbyterian.

"We have to persuade these patients to eat. The staff of psychiatric nurses brings a combination of patience and firmness to patient care. They get the patients to eat, while assuring them that they won't allow them to get fat," says Dr. Walsh.

"After hospitalization and psychotherapy, some patients still have a preoccupation with eating. But those who have been treated usually are able to keep their weight stable." ■

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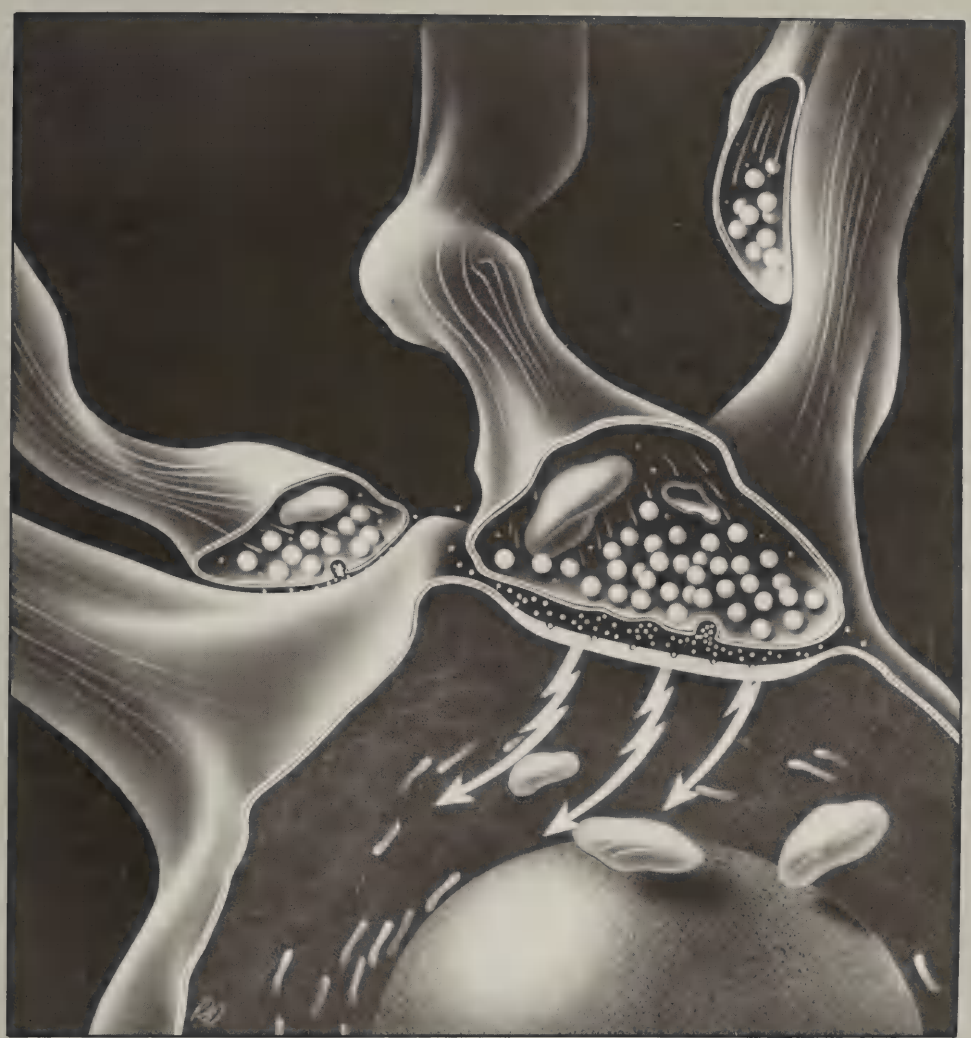

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For further information, call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

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Footnotes

ABOUT THE COVER

Researchers and clinicians at The Presbyterian Hospital have learned a great deal about the mysterious diseases that affect the nervous system, and many more discoveries are on the horizon. Pictured here is a synapse, the juncture across which nerves communicate with each other. Illustration by Robert J. Demarest.

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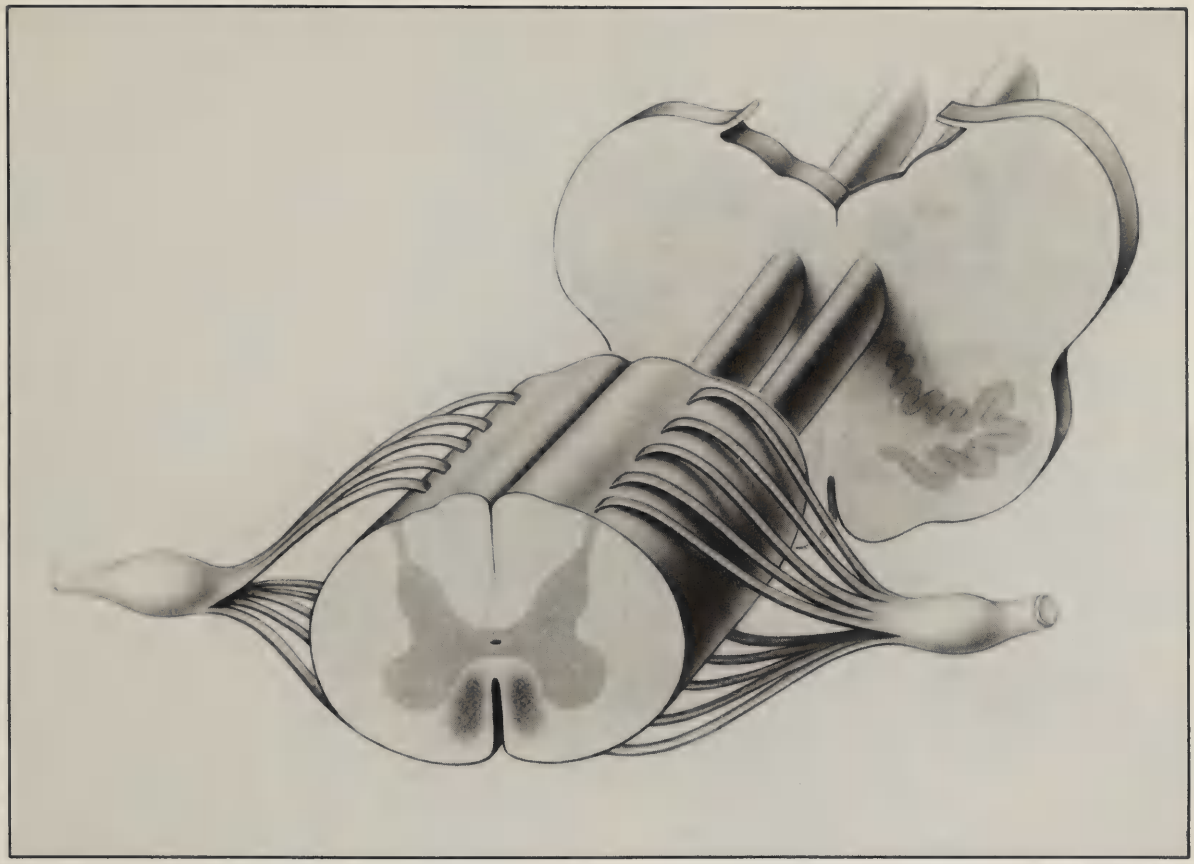
PRESBYTERIAN: A MAJOR CENTER FOR NEUROLOGICAL DISORDERS



Robert J. Demarest

In this cross section of the brainstem spinal cord (foreground), the two dark shadowy areas at bottom indicate nerve degeneration.

One of the early reports of the Neurological Institute noted that there was no place in the United States where individuals suffering from the diseases of the nervous system could be treated. Until the Neurological Institute opened its doors in 1909, patients had to seek help in Vienna, Berlin, London or Paris.

Within a month of its opening, the Institute's 86 beds were filled. Twenty years later, the Institute became part of The Presbyterian Hospital at Columbia-Presbyterian Medical Center and moved into its 211-bed facility at 168th Street and Fort Washington Avenue.

Today, the Neurological Institute continues to grow, both in size and in the scope of its programs.

PATIENTS FROM ACROSS THE NATION AND AROUND THE WORLD

Patients from across the nation and around the world have always come to the Neurological Institute because of the interaction of outstanding clinicians —neurologists, neurosurgeons, neuroradiologists, neuropathologists, neuroophthalmologists and physicians in rehabilitation and psychiatry. Says Dr. Lewis P. Rowland, director of the Neurology Service at Presbyterian, "These specialists interact as a group; the whole is more than the sum of the individuals. Their activities are also linked inextricably to research. This unique configuration of physicians working in close proximity has led to collaborations that have kept CPMC at the forefront of diagnosis and care for patients with neurologic disease. That tradition continues to the present day."

RESEARCH YIELDS IMPORTANT CLUE IN NEUROLOGICAL STUDIES

Research into the causes of many neurological diseases and development of improved methods of treatment remain a crucial part of the mission of the Neurological Institute, also a research arm of the Columbia University College of Physicians & Surgeons.

Current research in neuromuscular disease has yielded important information about the role of the immune system in peripheral nerve disease and in Lou Gehrig's disease (Amyotrophic Lateral Sclerosis) as well as a possible genetic component in ALS. The mechanisms responsible for muscular dystrophy and for rare diseases caused by biochemical changes inside muscles as they produce energy are also under investigation.

The outlook for myasthenia gravis patients is better because of a surgical procedure perfected here. Also, thanks to an improved system for monitoring nerve function during surgery, delicate operations in the brain and spinal cord are safer. ■

DOCTORS HELP PATIENTS WITH MOVEMENT DISORDERS RETURN TO THE MAINSTREAM OF LIFE

Dr. Stanley Fahn notes the progress made by myoclonus patient Barbara Jarldane as she undergoes therapy to increase the motor strength and fine motor coordination in her hands under the guidance of Cindy Rosen, occupational therapy student.

Eddie Klein had been shunted from one psychiatrist to another and had been in and out of psychiatric institutions for years before he finally was diagnosed as having a movement disorder called dystonia.

This disorder, with its persistent and painful muscle spasms and contorted postures, frequently is misdiagnosed, especially when it first appears in childhood.

"Children who are dystonic often are thought to be unruly or exhibiting some kind of psychological disorder. As a result, treatment is delayed, and often, the wrong medications are given. The condition can progress until it finally affects the entire body," says Dr. Stanley Fahn, director of the movement disorders program at The Presbyterian Hospital.

"Eddie Klein was 25 when we first saw him at Presbyterian. His condition had been misdiagnosed for years. He had been devastated all his life until he came here for treatment."

When Eddie first saw Dr. Fahn, he couldn't walk and he was bent over, almost touching the ground. There was a great deal of twisting motion in his limbs.

"My son couldn't even feed himself, shave or bathe. He was constantly in pain. His arms and legs were spastic and he couldn't use his hands," says Mrs. Frances Klein, of Boston.

"For years, Eddie underwent a great deal of mental torture. He was diagnosed as schizophrenic, but inside, he knew he was normal.

"We didn't know where to turn. Finally, we were referred to Dr. Fahn. It was such a relief to know there was hope that my son could lead a normal life," she says.

"After diagnosing Eddie, we began treating him with a drug that was undergoing clinical trials. This drug works by blocking the uptake of dopamine in the brain and helps to stop the spasms, enabling the patient to sit and walk without twisting movements," says Dr. Fahn.

DIAGNOSIS GIVES NEW HOPE AND A NEW LIFE TO YOUNG MAN

Eddie, now 30, lives in Boston and has been holding a job since first coming here for treatment in 1979. Before that, he was unable to work.

"Dystonia is difficult to diagnose. Since nothing appears on laboratory tests to indicate any abnormality, the condition may be overlooked and considered to be emotional in origin, because of the psychological symptoms a patient displays," says Dr. Fahn.

In some cases, especially the focal dystonias — those which involve only one part of the body — doctors here are administering small amounts of botulinum toxin into the muscle that is subject to spasm, thus weakening the muscle and halting the spasms.

This is currently the subject of clinical research here, as part of the studies being conducted in the Dystonia Research Center at Columbia-Presbyterian Medical Center. This center is the only

one in the country engaged in this research, which is supported by the Dystonia Medical Research Foundation.

In one case, a patient's jaw was clenched so tightly that the woman broke her palate. "She was in miserable condition — she couldn't chew or swallow properly and she was losing weight," says Dr. Fahn. "By injecting botulinum toxin into her jaw, we were able to relax the muscles. The woman now can open her mouth and eat. Plastic and oral surgeons are preparing to repair her broken palate — soon, she will feel normal again."

MOVEMENT DISORDERS AFFECT MORE THAN 2 MILLION AMERICANS

Eddie Klein and this young woman are among the more than 2 million Americans who suffer from movement disorders. Half a million people alone have Parkinson's disease. The others have torsion dystonia, tardive dyskinesia, tics, tremors, myoclonus (which causes irregular rapid jerking movements) and Huntington's chorea. Many of these patients come to Presbyterian from various cities across the country.

Parkinson's disease, one of the most common movement disorders, starts insidiously. The condition can slowly progress from an occasional tremor in a limb or slowness of movement into uncontrollable shaking, loss of balance and an increased inertia that results in such slowness of movement that a person needs help in carrying out activities of daily living.

Those with Parkinson's disease can be treated with L-dopa, a medication which replaces missing dopamine in the nerve cells within the brains of these patients. It is the missing dopamine that causes the symptoms of the illness. Medication can relieve the symptoms of many patients and enable them to return to work and social activities with only mild symptoms.

DEPRESSION AND DEMENTIA CAN ACCOMPANY PARKINSON'S DISEASE

Besides the movement disorders that accompany Parkinson's disease, there often are other debilitating symptoms. Half of all these patients suffer severe depression, while dementia occurs in a little less than a third.

Neurologist Dr. Richard Mayeux found that patients with depression lack the neurotransmitter serotonin as well as dopamine. Dr. Mayeux is beginning a clinical drug trial here using a precursor to replace the missing serotonin.

"Acetylcholine, serotonin and norepinephrine all seem to have a role in parkinsonism. These neurotransmitters interact differently depending upon variations in the disease. We hope to be able to manipulate the neurotransmitters by administering medications that will control movement and intellectual processes," says Dr. Fahn.

Dr. Fahn and Dr. Mayeux and other researchers at Columbia-Presbyterian Medical Center also are studying the intellectual changes that often appear with Parkinson's disease. The Parkinson Disease Foundation supports much of the research here and has its headquarters at CPMC.

An epidemiological study of Parkinson patients now is under way at the Columbia University College of Physicians & Surgeons. The patients were examined and classified by such symptoms as depression, memory loss and slow thought processes.

Scientists hope that the results will enable them to identify a new group of Parkinson patients who show both a deficiency in dopamine and serotonin. Dr. Mayeux, also associate professor of clinical neurology at P&S, says, "A clear identification of such a group may lead to different and improved treatment for these patients."

Dr. Richard Mayeux is studying the role of neurotransmitters in patients suffering from Parkinson's disease.

DOCTORS COMBINE RESEARCH AND NEW DIAGNOSTIC TECHNIQUES TO COMBAT BRAIN TUMORS

A 10-year-old boy from Singapore who came to The Presbyterian Hospital for treatment of a pineal region tumor that filled a large portion of his brain now is back home with his family and attending school.

"The boy has no symptoms after one year. He sent me a letter and a photo of himself on a skateboard," says Dr. Michael Fetell, associate attending neurologist.

"Because we had certain biochemical markers of the tumor, we were able to determine the type of tumor and custom design a treatment plan. Fortunately, his tumor was sensitive to both chemotherapy and radiation."

THE "SEAT OF THE SOUL" ONCE WAS DEEMED SURGICALLY INACCESSIBLE

The pineal region of the brain, considered to be the seat of the soul by the early Greek philosopher Socrates, sits deep within the brain. The pineal gland is situated near the area where cerebrospinal fluid passes through the brain. Tumors occurring in this area were considered inoperable until about 10 years ago.

A safe and effective surgical technique to remove pineal region tumors was developed by Dr. Bennett M. Stein, director of the Neurological Surgery Service.

Thirty-three percent of these tumors can be removed by surgery. Dr. Stein and his team of neurosurgeons work with neurologists and radiation therapists in managing pineal tumors. Patients from all over the world are referred to The Presbyterian Hospital at Columbia-Presbyterian Medical Center for this type of surgery.

Dr. William Maltese conducts a cholesterol synthesis study with Ellen Tress, research worker, at left, and Kathy Sheridan.

Joel Landau

THE OUTLOOK IS GRIM FOR CERTAIN TYPES OF TUMORS

A child who had a different type of tumor was not so fortunate. Back in July 1982, a 2-year-old New Jersey girl was diagnosed as having an ependymoma — a brain tumor that is difficult to remove because it is located deep in the brain.

Surgeons were able to remove part of the tumor at that time, and the youngster received radiotherapy. When Colleen Giblin began to have problems walking, talking and swallowing, surgery was undertaken again, and this time, neurosurgeons at The Presbyterian Hospital were able to almost completely remove the tumor. Five months later, the whole tumor recurred. Half a year later, Colleen died.

"I was confident that my daughter was receiving the best treatment available in the world, and still it was not enough," says her father Paul Giblin.

DISTRAUGHT COUPLE SEEKS TO BOOST BRAIN TUMOR RESEARCH EFFORTS

Distraught over Colleen's death, Mr. Giblin and his wife decided to try to help other families facing similar tragedies.

The New Jersey couple established the Colleen Giblin Memorial Fund for Pediatric Neurological Research at Columbia-Presbyterian Medical Center.

"We began to ask what was being done to try and save these children. After looking into all of the work being done in pediatric neurology, we found that there was insufficient funding from the government for research. About 2,000 children develop a brain tumor each year, including ependymoma, and most of these children eventually die," says Mrs. Giblin.

NEW APPROACHES ARE NEEDED TO SUCCESSFULLY TREAT ALL PATIENTS

"Brain and spinal cord tumors are uncommon in infants and children. While diagnostic techniques and treatment programs make the prospect of a cure a reality for many children with tumors, they cannot produce a satisfactory out-

come in all cases. New approaches to treatment are desperately needed if all brain tumors are to be successfully removed without injuring the vulnerable developing brain tissue that surrounds the malignant growth," says Dr. Darryl C. DeVivo, director of Pediatric Neurology, also professor of pediatrics and neurology at the Columbia University College of Physicians & Surgeons.

Scientists at Columbia-Presbyterian Medical Center are examining possible biochemical and metabolic differences that may exist between normal brain tissue and tumor tissue.

RESEARCHERS STUDY PATHWAY TO HALT GROWTH OF CANCER CELLS

Since tumor cells proliferate rapidly, they need large amounts of various substances to renew themselves, including cholesterol and related compounds. Dr. William Maltese, a cell biologist working in the Pediatric Neurology Divisional Laboratories at CPMC, has discovered that drugs which block the regulatory enzyme for cholesterol synthesis also suppress tumor growth.

"It appears that malignant cells require certain precursors of cholesterol to continue growing. By inhibiting the synthesis of these compounds, we have been able to destroy experimental tumors. We hope that this approach will allow us to slow the growth of human tumors without affecting normal tissues," says Dr. Maltese, an assistant professor of neurology at the Columbia University College of Physicians & Surgeons.

PATIENT'S PROGNOSIS DEPENDS ON THE TYPE OF TUMOR

The outlook for patients both young and old depends on the type of tumor that is present in the brain or spinal cord.

It is thought that most brain tumors are congenital and somehow become activated after birth.

A cerebellar astrocytoma often can be removed completely, with little likelihood of returning or spreading.

When a child has an ependymoma or a medulloblastoma, neurosurgeons often are able to remove most of the tumor. However, the growth usually recurs — with deadly consequences. These tumors cannot be fully controlled by radiotherapy or chemotherapy in about 30 to 50 percent of the cases.

In many patients, a tumor is too small or rests too deeply in the brain for doctors to safely perform a biopsy — an important test to determine the type of tumor so that the best possible course of treatment can be determined. New equipment that combines imaging techniques with precisely plotted mathematical coordinates is being installed here to enable doctors to get to the site of the tumor without major surgery.

Joel Landau

Dr. Edgar Housepian with new equipment to diagnose and treat brain tumors.

Instead of removing a section of bone, surgeons make a small hole in the skull. Before drilling, they plot the exact location of the tumor. They then pass a fine probe through the opening into the brain and remove tissue for analysis.

They can use the same route to pass small radioactive pellets, called "seeds," into a tumor to deliver high doses of radiation to the site of a malignancy, explains neurosurgeon Dr. Edgar Housepian, director of the Brain Tumor Study group here.

POWERFUL NEW TOOL IS PRECISE IN PINPOINTING TYPE OF TUMOR

"These techniques will enable us to verify preliminary diagnoses on patients who couldn't tolerate exploratory surgery," says Dr. Fetell. "It's another way of knowing exactly the nature of the tumor we're treating. This is a very powerful tool."

"A major study for incurable tumors also is in the offing here. It offers new hope in an area that otherwise has a dismal outlook," says Dr. Stein.

Some brain tumors may appear to be malignant when a neurologist begins to make a diagnosis, but turn out to be benign and operable, explains Dr. Fetell. "Until we define the type of tumor, physicians should not forecast a grim prognosis."

UNRAVELING THE MYSTERIES OF NEUROMUSCULAR DISORDERS

The simple ability to make a fist, to pick up a pin, to lift the eyelids in order to see or even to breathe regularly and freely all depend upon muscle cells.

If one group of muscle cells fails to function, the resulting situation may be life-threatening.

When such disorders begin, patients sometimes feel strange but can't imagine what's happening.

Thirty-year-old Cynthia Cuizon experienced double vision and difficulty walking to church last Easter Sunday. A few months later, she could not breathe without the aid of a respirator. Now, she is a patient at The Presbyterian Hospital, where she is undergoing treatment for myasthenia gravis.

Myasthenia gravis can be treated and controlled, as can certain other neuromuscular disorders, such as the peripheral neuropathies, diseases of the nerves that cause weakness, muscle atrophy and sensory abnormalities.

MYASTHENIA GRAVIS: A CASE OF DOUBLE VISION OFFERS A CLUE

When Mrs. Cuizon first suffered double vision, she visited an ophthalmologist who immediately referred her to Dr. Myles Behrens, a neuro-ophthalmologist at Presbyterian. Dr. Behrens promptly made the correct diagnosis and sent her directly to Dr. Marcelo R. Olarte, assistant attending neurologist.

Eventually, Mrs. Cuizon was admitted to the hospital because she couldn't walk or lift herself from a chair or from her bed.

"I was so lucky that my doctor in New Jersey recognized that my symptoms were related to my nerves and muscles," says Mrs. Cuizon.

SIGNALING SYSTEM BETWEEN THE NERVES AND MUSCLES IS DISRUPTED

When myasthenia gravis strikes, it disrupts the signaling system between the nerves and the muscles. Neurologist Dr. Audrey Penn, who is studying immunological aspects of myasthenia gravis, says her studies are aimed at reducing the large amount of antibodies that patients with the disease tend to produce. The function of these antibodies has been disturbed — rather than protecting the patient by fighting infections, they turn against the patient and destroy the receptors on the muscles, interfering with transmission of crucial messages from nerve to muscle and causing weakness.

Under the care of Dr. Olarte, Mrs. Cuizon underwent a procedure called plasmapheresis to remove a large portion of the damaging antibodies from her blood. Following this, associate attending surgeon Dr. Alfred Jaretzki III removed her thymus gland, the probable source of the antibodies. The surgical technique used by Dr. Jaretzki was developed by him here at Columbia-Presbyterian Medical Center. It entails removal of more thymic tissue than do standard thymectomy procedures performed elsewhere and appears to give significantly better results.

"Neurological diseases so often are disabling, but if disorders such as myasthenia gravis are diagnosed and treated early, they can be reversed," says Dr. Penn.

PROMISING LEADS BUT NO CURE YET FOR ALS

Patients who suffer from ALS (amyotrophic lateral sclerosis), also known as Lou Gehrig's disease, are less fortunate, for there is no cure for this progressively debilitating condition.

"Although no cure exists for ALS, patients can be helped by physical therapy by devices to assist in daily tasks, and by counseling for the emotional problems that arise in the course of the disease. Several therapeutic drug trials have been conducted here

Dr. Audrey Penn, at left, and Dr. Marcelo R. Olarte discuss their diagnosis with myasthenia gravis patient Cynthia Cuizon.

by Dr. Olarte. "They offer hope for many patients and may yet lead to effective treatment," says Dr. Lewis P. Rowland, director of the Neurology Service.

ALS: THIS TRAGIC DISEASE MAKES PATIENTS PRISONERS IN THEIR BODIES

When patients come to the Hospital with signs of Lou Gehrig's disease, doctors perform extensive tests to ensure that the disorder is ALS and not another illness with similar symptoms.

"ALS is a tragic occurrence," says Dr. Norman Latov, assistant attending neurologist. "These patients remain mentally intact, but they are unable to do anything for themselves. They virtually are prisoners in their own bodies."

A case of ALS might begin with slight paralysis in the arms and legs. As the disease progresses, the patient will be unable to swallow food or even his own saliva. Breathing grows difficult and in some cases, the vocal cords become paralyzed.

THREE DISEASES TRIGGER THE LOSS OF BRAIN CELLS

"ALS shares certain characteristics with Alzheimer's disease and Parkinson's disease and the causes of all three remain unknown," says Dr. Rowland, who also serves as chairman of the Department of Neurology at the Columbia University College of Physicians & Surgeons.

"These diseases are common enough to be considered public health problems. In all three diseases, special sets of neurons in the brain are affected. These nerve cells progressively and mysteriously disappear. But while there are clues in Alzheimer's disease and Parkinson's disease, ALS is much more evasive," says Dr. Rowland.

Recent clues to the cause of ALS have emerged from research at CPMC. Studies by Dr. Latov, also an assistant professor of neurology at P & S, have linked peripheral nerve disease and ALS to the presence of an abnormal antibody in the blood. Peripheral nerve disease, too, left untreated, can leave a patient paralyzed and bedridden.

EVIDENCE INDICATES THAT ALS COULD BE AN AUTO-IMMUNE DISEASE

"We suspect that this antibody binds to the nerve cells to cause the disease. It's possible that an injury to part of the cell membrane by the patient's own immune system could cause ALS. There was no evidence before that ALS could be an auto-immune disease," says Dr. Latov.

Dr. Salvatore DiMauro inspects muscle samples stored in liquid nitrogen.

A condition called plasma cell dyscrasia, which can cause peripheral nerve disease, may also cause ALS. Patients with this disorder produce antibodies against components of their nerves which causes peripheral neuropathy in some patients and ALS in others.

Dr. Latov developed a test to identify these antibodies that aids in the diagnosis of peripheral neuropathy. This test enables doctors to rule out other causes of neuropathy, and to treat patients with medications that effectively suppress the body's immune system before it causes too much damage.

"In some patients, this immune mechanism could be the cause of the disease, while in others, it could be the cure. If we could find out what initiates the auto-immune response, perhaps we could turn it off, or suppress it," says Dr. Latov.

GENETIC DISORDERS MAY PROVIDE A LINK IN UNDERSTANDING ALS

Genetic disorders may provide another clue to aid in the understanding of ALS. Dr. William Johnson, associate attending neurologist, found that patients with hereditary Tay-Sachs disease lack an enzyme that also is deficient in some patients with ALS.

continued on next page

At present, this enzyme deficiency occurs more frequently in adults than in children. In the past, such tests were administered only to infants who showed signs of Tay-Sachs disease. "We tested older childen, teenagers and adults and were surprised to find deficiencies of the same enzyme," says Dr. Johnson, who also is associate professor of clinical neurology at P & S.

"The enzyme that is missing in these patients is critical for brain and spinal cord function," says Dr. Johnson. "If it is missing, the brain and the rest of the central nervous system are in trouble."

Studies of the gene responsible for producing the enzyme that is deficient as well as the enzyme's role in normal neurons are under way at CPMC.

Research by scientists at Columbia-Presbyterian Medical Center is offering new clues to the cause of ALS. Researchers also are investigating the mechanism responsible for myasthenia gravis and muscular dystrophy, as well as for rare diseases caused by biochemical changes inside muscles as they produce energy.

MUSCULAR DYSTROPHY: THE PUZZLE REMAINS UNSOLVED

The puzzle of other neuromuscular diseases still remains unsolved. Muscular dystrophy, for instance, is a devastating disease that strikes children. By the time these children reach the age of 10 or 12, they no longer can walk. Eventually, the disease affects their respiratory muscles, and many of these young patients die by the time they enter their 20s.

"All forms of muscular dystrophy are hereditary," says neurologist Dr. Salvatore DiMauro, professor of neurology at Columbia University College of Physicians & Surgeons. "Some forms affect only males, while others strike both sexes. In some cases, the disease appears later in life and leaves its victims impaired, but still able to function."

No treatment is available for patients with muscular dystrophy, which causes degeneration of the muscle fibers. As the fibers die, the tissue regenerates, but increasingly, the fibers disappear and are substituted by connective tissue and fat.

"As we have tried to understand what goes wrong in muscular dystrophy, we have looked for an abnormal enzyme that may be upsetting the metabolic pathways and impairing the way energy is utilized. Because we could not identify the protein that triggers the degeneration of muscle fibers, now molecular geneticists are trying to clone the abnormal gene that causes the disease," says Dr. DiMauro.

Dr. Lewis P. Rowland, director of the Neurology Service.

RARE MUSCLE DISEASES AFFECT THE WAY THE BODY USES ENERGY

Another group of diseases under study at CPMC is the metabolic myopathies, which also are genetic in origin. These disorders affect the pathways that generate energy within the muscles.

For instance, when a person with a condition called McArdle disease sprints for a bus, he'll develop pain and muscle cramps. If he stops and rests, he is likely to be fine. If he continues running for a few blocks, his muscles will break down to the point that the myoglobin, or pigment, in his muscles, will leak into his kidneys. If this condition is not treated, the renal tubules can become clogged and produce kidney failure.

DISORDER STEMS FROM IMPROPER USE OF MUSCLE'S FUEL SUPPLY

In this person's case, myoglobinuria occurs when glycogen, a complex sugar stored in the cell, cannot be used in the muscle.

With treatment, this condition can be controlled by managing and pacing the type of exercise that causes the muscle to break down.

Another disorder is set off by a different kind of exercise: Unlike the man who sprinted a few blocks for the bus and developed deep muscle pain, another patient known for his prowess in lifting heavy objects wilted after beginning a five-mile trek with his division in the armed services.

"In this situation, the disorder is triggered by a deficiency in the way muscles use fats," says Dr. DiMauro.

SUSTAINED EFFORT REQUIRES A DIFFERENT TYPE OF FUEL

While glycogen provides the energy for quick, fast movement, lipids offer the fuel that muscles need for long, strenuous activities. This patient could not use the energy stored in lipids after his glycogen was depleted and he collapsed.

Dr. DiMauro, who serves as co-director of the H. Houston Merritt Clinical Research Center for Muscular Dystrophy and Related Disorders at P & S, and his team of scientists have discovered four new enzyme defects that lead to such illnesses as myoglobinuria.

Researchers at CPMC are asking if there is an error in the genetic code in these illnesses.

"In some patients, the symptoms suggest a block in the way their bodies use fat or sugar in the mitochondria — a structure that acts as the furnace of the cell," says Dr. DiMauro.

"In some cases, we can bypass this block with medications. For the others, we are studying the illnesses in order to better understand them and to develop a cure." ■

MONITORING TECHNIQUES ENABLE SAFER REMOVAL OF TUMORS FROM SPINAL CORD AND ACOUSTIC NERVE

Every movement we make, every sensation we feel depends on the transmission of impulses along the network of nerves in our bodies.

The complexity and delicacy of the nervous system present special problems to neurosurgeons working in and around the brain and spinal cord, where nerve structures are particularly dense and where the nervous system's main relay stations are located. In treating a patient with a tumor of the spinal cord, for instance, the neurosurgeon's task is twofold: to remove the tumor and to avoid injury to adjacent nerve fibers.

In recent years, computerized monitoring of nerve pathways during surgery has been an invaluable aid in assuring that these fragile structures remain intact.

ELECTRICAL MESSAGE SENT THROUGH NERVE

This technique, known as evoked potential monitoring, involves applying an electrical stimulus to the nerve at a point before the site of the operation and monitoring the resultant nerve activity at a point beyond the operative site. It amounts to sending an electrical message through the nerve fibers and picking up and recording the message at another point. If, during surgery, the message received deviates from the message sent, surgeons know to alter their course accordingly.

"These monitoring techniques give the surgeon a means during surgery to assess the integrity of the nervous system. For instance, it lets him know if he is putting too much pressure on a nerve, or if the blood supply to the area is being compromised," says Dr. Timothy Pedley, director of the Clinical Neurophysiology Laboratories here. "The goal is to spot potential injury and avoid it."

NEW TECHNIQUE HERE PROVIDES IMMEDIATE INFORMATION

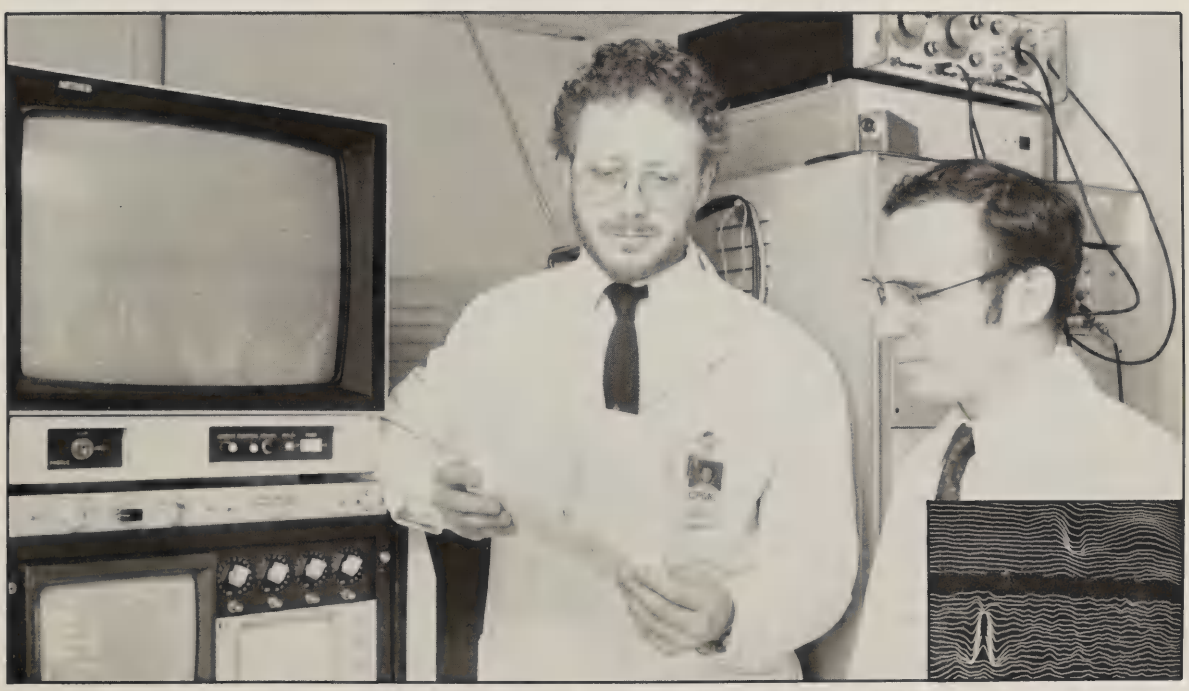
Just recently, Dr. Joseph A. Sgro, associate neurologist at The Presbyterian Hospital and associate professor of neurology at the Columbia University College of Physicians & Surgeons, and Dr. Ronald G. Emerson, assistant attending neurologist and assistant professor of neurology at P & S, developed a new evoked potential monitoring system. This system reduces the time necessary for the computer to process signals transmitted through the nerve pathways, giving the surgeon the information almost instantaneously.

Because they are so tiny, nerve messages could previously only be analyzed by looking at the average of many signals. It took time for the computer to detect and process these signals: the computer had to differentiate the nerve signals from electrical equipment in the operating room. "The technique we've devised," says Dr. Sgro, "gives the actual nerve signal, not a computed average, and gives it to us almost immediately. Because it also is able to screen out the other signals, the computer is more sensitive."

IMPORTANT IMPLICATIONS FOR RESEARCH

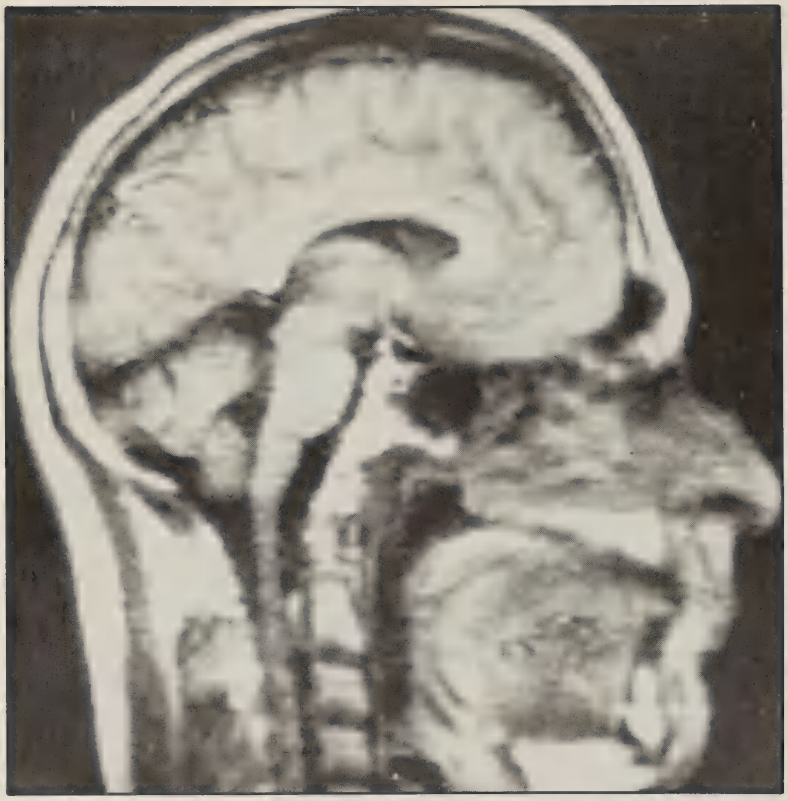
This new system, the only one of its kind in the world, is currently being evaluated at Presbyterian in an attempt to assure that paralysis of the facial nerve or deafness do not occur during surgery to remove tumors from the acoustic nerve, as well as in other neurosurgical procedures.

According to Dr. Pedley, it also has important implications for research. "We hope to use this technique to learn more about how the brain sends and generates messages."



Dr. Joseph Sgro, at left, and Dr. Ronald Emerson review data from a machine they designed to monitor brain and nervous system function during surgery. Inset: patterns of electrical activity produced by the nerve during surgery.

NEUROLOGISTS, RADIOLOGISTS, NEUROLOGICAL SURGEONS TEAM UP TO COMBAT STROKE



A profile of the human head as presented by a Magnetic Resonance Imaging scanner.

Just as the beautician applied permanent setting lotion to Marge's hair, the 56-year-old woman collapsed in the chair.

Immediate emergency evaluation showed that the woman had suffered a stroke. By using advanced imaging techniques, doctors at The Presbyterian Hospital were able to pinpoint the affected area in the brain and chart a treatment plan that prevented further, irreversible damage.

A blood clot had lodged in the carotid artery in Marge's neck, cutting off the blood supply to the brain. Neurological surgeons who work with the Stroke Service at Presbyterian performed surgery to remove the atherosclerotic plaque that caused the obstruction, thus clearing the artery's path. Marge has recovered fully and is back to work.

Every year, stroke claims the lives of 165,000 people in the United States. The number of patients who are disabled by stroke is even greater — many lose their ability to speak and to use parts of their bodies.

PRESBYTERIAN IS A MAJOR CENTER FOR STROKE TREATMENT

More than 700 patients come to Presbyterian annually for treatment and, in some cases, prevention of stroke.

Among the diagnostic tools available here are the range-gated duplex doppler, which enables doctors to assess the rate and turbulence of blood flow in the carotid artery in the neck, as it moves up toward the brain. "Studies of blood flow have shown that some patients progress rapidly from a relatively clear artery to severe carotid disease. We consider these patients to be at an especially high risk for stroke," says Dr. J.P. Mohr, director of the Stroke Service.

Small areas of brain tissue that have suffered stroke damage now can be visualized by means of multi-nuclear Magnetic Resonance Imaging (MRI). The world's first and still most powerful clinical MRI unit was developed at Columbia-Presbyterian Medical Center.

The device employs powerful magnets to create a picture of important substances in live tissue — sodium, hydrogen and phosphorous. A high concentration of sodium, for instance, indicates injury to brain cells. A normal cell constantly takes in sodium and returns it to the blood, but a dead or damaged cell loses this pumping ability. Variations in the sodium content of cells serve as indicators of what damage is temporary and what is permanent.

"With MRI, it has become possible to detect a stroke within the first few hours after its occurrence and to determine its size, location and extent. This technology also enables us to study how the stroke evolved," says Dr. Sadek Hilal, director of Neuroradiology.

"There is no more sensitive mechanism for the detection and evaluation of tissue damage in the brain than MRI. By sorting out those strokes caused by problems in the carotid artery from those resulting from the basilar artery, which distributes blood to the brain stem, cerebellum and posterior cerebrum, the physician can map the appropriate course of surgical management," adds Dr. Hilal.

Some new medical therapies under development at CPMC include:

- A drug that slows brain damage caused by clogged arteries.
- A special form of starch that helps the body bring more blood to damaged areas of the brain.
- A substance that keeps blood from clotting and may be more powerful than aspirin.
- A medication, or "tonic," that helps the brain work harder to recover more quickly from a stroke.

The cause of stroke varies — in some patients, it is due to atherosclerosis, blood clots or hemorrhaging. In others, the cause is less clearcut. "About 25 percent of all strokes have an unknown cause," says Dr. Mohr.

The Stroke Service consists of

neurologists, neurological surgeons, radiologists, pathologists, epidemiologists, rehabilitation medicine specialists and scientists at the Columbia University College of Physicians & Surgeons who provide clinical care while seeking clues to the causes of strokes of unknown origin.

When stroke patients need more than medications, neurosurgeons at Presbyterian remove obstructions — atherosclerotic plaque — that cause severe blockage in the carotid artery. When a patient has a blocked artery deep in the neck or in the brain, neurosurgeons either remove the blockage or form a bypass around it by attaching one artery to another, thereby opening a new conduit for blood to flow freely to the brain.

"Strokes resulting from hemorrhage into the brain present a different type of surgical challenge," says Dr. Bennett M. Stein, director of the Neurological Surgery Service at Presbyterian. "One cause of such intracranial bleeding is an arteriovenous malformation (AVM). Although not common, this condition generally afflicts otherwise healthy people between the ages of 20 and 50. On the other hand, atherosclerotic disease usually occurs in patients above 50."

An AVM is a tangle of blood vessels in which the arteries short circuit the blood directly into the veins so that none reaches the brain. The veins, unable to withstand the pressure within the arteries, may rupture.

ONCE AN AVM IS IDENTIFIED, THE TEAM MEETS TO DRAW UP A TREATMENT PLAN

When an AVM is present, the medical team works together to prevent a stroke. Once the Stroke Service pinpoints the location, size and condition of the abnormality, doctors evaluate the therapy they will use.

"Half of the patients with AVMs require a technique called embolization in preparation for surgery. In others, embolization alone can protect against hemorrhage," says Dr. Stein.

Embolization reduces blood flow to the malformation and diminishes its size and the likelihood of rupturing. By introducing tiny plastic pellets or a liquid adhesive into the bloodstream through a catheter which is placed near the AVM, doctors can plug the arteries in the malformation and cause it to shrink, making the AVM easier to remove.

Many patients older than 50 suffer stroke as a result of a vascular abnormality known as an aneurysm — a single blister, or balloon, in the wall of a blood vessel that may rupture. By using the operating microscope, surgeons can safely remove many aneurysms in the brain.

Neurosurgeons treat some cerebral aneurysms by placing tiny clips on the neck of the abnormality, which permanently excludes it from the effects of circulating blood and any changes in blood pressure, thereby preventing a rupture.

REHABILITATION MEDICINE SERVICE HELPS PATIENTS BACK TO PRODUCTIVITY

Many stroke patients have made remarkable recoveries. Others must spend months relearning such tasks of daily living as handling a fork, going to the bathroom unassisted, or walking with the help of special appliances.

Doctors, nurses and physical and occupational therapists in the Rehabilitation Medicine Service at Presbyterian work with the Stroke Service to help patients through what may be a long and frustrating struggle toward returning to a productive life. ■

REHABILITATION NURSES LEND A HAND TO RECOVERING STROKE PATIENTS

A year-and-a-half after suffering a stroke, Robert Downer Sr. is back at his desk with a New Jersey firm.

"When I first got home from the hospital, I never thought I'd be able to go back to work. Now, I have a completely different attitude — I feel I've made a very good comeback," says the 51-year-old man, who was treated for a stroke at The Presbyterian Hospital.

Patients like Robert Downer often spend some time in the In-Patient Rehabilitation Unit at Presbyterian. In the unit, they learn a wide range of skills and develop various coping strategies — from developing muscles in a stroke-impaired arm to re-learning how to hold a fork or use a bathroom unassisted.

MANY PATIENTS SHOW MARKED IMPROVEMENT AFTER A FEW WEEKS

"When many patients first come here, they can do nothing for themselves — not even feed themselves. After a few weeks in the unit, following an intensive educational program, many are able to eat unassisted, to stand up by themselves and to transfer from the bed into a chair with a nurse standing by," says Una Murphy, R.N.

A stroke patient often is unaware of the side of his body that has been affected by the stroke.

Gradually, the patient develops an awareness of the affected area and begins to compensate for his limitations and loss of function.

REHABILITATION NURSES HELP TO EDUCATE RECOVERING PATIENTS

"Helping a patient resume living after suffering a stroke entails a lot of patient education on the part of the nursing staff," says Ms. Murphy.

"Rehabilitation nurses help ensure that the skills a patient learns in physical and occupational therapy are reinforced and incorporated into the activities of daily living. They also help stroke patients learn to view themselves differently." ■

Joel Landau

Una Murphy, R.N., helps stroke patient Maria Z. Wyrzykowski transfer from wheelchair to bed.

REYE SYNDROME: EARLY DIAGNOSIS CAN MAKE A LIFE-SAVING DIFFERENCE

Daena Miller's sore throat was reason enough for her mother to keep the 7-year-old home from summer camp. Three days later, the youngster still was cranky and tired.

The next day, she was disoriented, becoming more combative and was vomiting up to five times an hour. After she was admitted to a nearby New Jersey hospital, the child was referred to The Presbyterian Hospital for diagnosis of what turned out to be Reye syndrome, a serious brain disorder that occasionally follows viral illness in children.

Daena was admitted to the Pediatric Intensive Care Unit, where she remained comatose and near death at times. After four days of monitoring and treatment, Daena regained consciousness. A week later, she was at home, fully recovered, and eager to play with her friends.

"I wasn't prepared for a 100 percent recovery, and it took me a while to believe it. Everything is OK and Daena is completely normal," says Mrs. Shelley Miller.

ADVANCED TREATMENT HAS HELPED CUT THE DEATH RATE TO NEARLY ZERO

In the past, the death rate from Reye syndrome was about 70 percent. Now, because of specialized treatment programs, such as the one available at Presbyterian, the rate is nearly zero. This disease is deadly if the patient is not diagnosed properly, or if it isn't caught in time.

Reye syndrome is insidious, because it often masquerades as other less serious illnesses, thus making an early diagnosis difficult. A child who has the disease usually begins vomiting just as he or she is recovering from a bout of influenza, chicken pox or some other viral infection. The youngster also may appear lethargic, disoriented and sometimes, unruly. When these symptoms pass, the child may slip into a coma, which may be mistaken for extreme tiredness and a need for sleep.

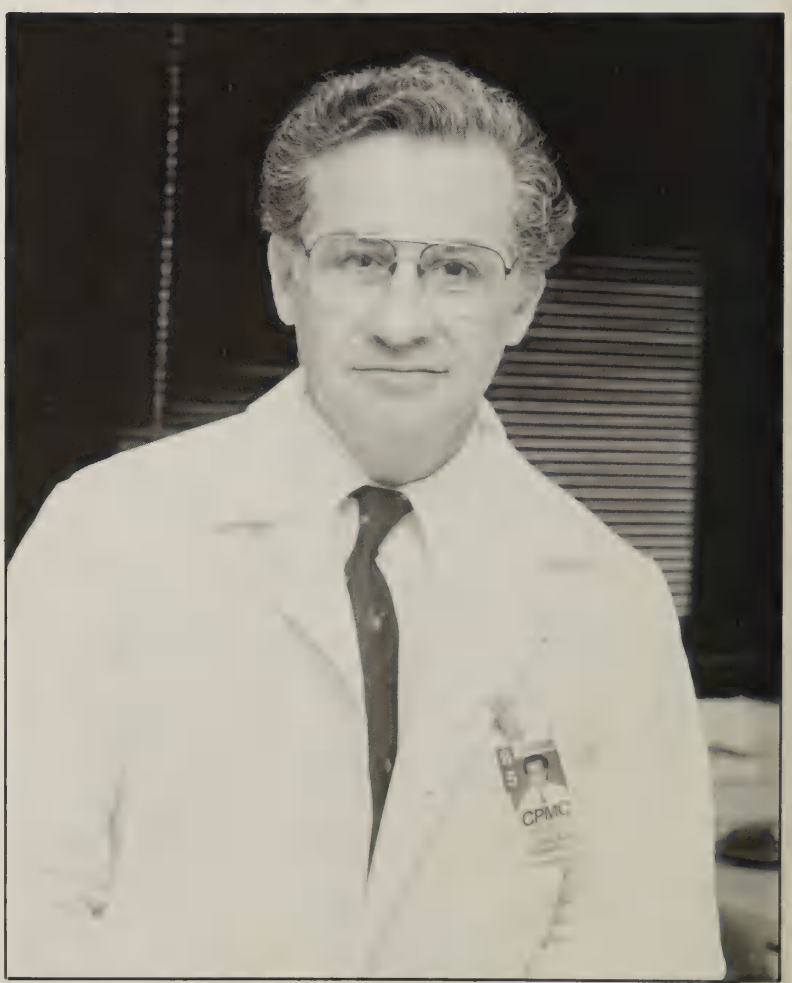
"In the United States, it is estimated that Reye syndrome strikes about 3,000 children a year, most of them between the ages of 5 and 15," says Dr. Darryl C. DeVivo, director of the Division of Pediatric Neurology.

Physicians have not established what causes Reye syndrome. Testing for the disease is a complex procedure, but once Reye syndrome is diagnosed, it usually can be treated successfully. During treatment, a neurosurgeon may drill a small hole into the patient's head, and insert a small sensor which allows the physician to monitor pressure inside the skull and to treat it if the pressure becomes alarmingly high. At the same time, doctors must give the patient fluids to combat the dehydration caused by severe vomiting. However, these fluids may cause an increase in pressure, Dr. DeVivo explains. "We have to strike a balance, and it's a delicate one."

Occasionally, some of a patient's blood must be replaced by administering transfusions. "We're not certain why, but current evidence suggests that the transfusions may help a few patients at high risk," adds Dr. DeVivo.

"If we can begin treatment early enough, there's a good chance that a patient can make a full and complete recovery with no lasting damage."

Dr. Darryl C. DeVivo, director of the Division of Pediatric Neurology.



Joel Landau

DR. ROSEN NAMED OB/GYN DIRECTOR

Mortimer Gilbert Rosen, M.D., has been named Director of the Obstetrics and Gynecology Service of The Presbyterian Hospital (PH) and Chairman of the Department of Obstetrics and Gynecology at the College of Physicians and Surgeons, Columbia University (P & S). Dr. Rosen also was named The Willard C. Rappleye Professor of Obstetrics and Gynecology at P&S.

Dr. Rosen is a clinical practitioner of Obstetrics and Gynecology and has a long history of studying the developing fetal brain before birth, searching for answers related to the origins of abnormal human brain development, behavior and brain damage. He is an authority on the use of the fetal electroencephalogram during labor and the effects of drugs given to the mother on the developing brain.

Dr. Rosen has served as Chairman of a conference on cesarean births sponsored by the National Institutes of Health, which demonstrated a concern for the ever rising cesarean birth rates. The panel report documented that the cesarean birth rate for patients with repeat cesareans and dystocia (difficult labor) could be lowered, while still maintaining quality health outcomes for the mothers and children.

Dr. Rosen was director of Obstetrics and Gynecology and the Maternity and Infant Care Project at Cleveland Metropolitan General Hospital from 1973 until he accepted his current appointments at Columbia-Presbyterian Medical Center. He also was a professor of reproductive biology during this period at Case Western Reserve University School of Medicine. From 1973 to 1981 and from 1983 until he left Cleveland, he was director of the Perinatal Research Unit at Case Western (Clinical Research Center, NIH).

A native New Yorker and former major in the United States Air Force, he is an author of nearly 150 articles and books in his field. ■

Dr. Mortimer Rosen

FOOTNOTES

ANESTHESIOLOGY: **Dr. Lester C. Mark,** consultant and professor emeritus of Anesthesiology at the Columbia University College of Physicians & Surgeons, recently concluded a two-month term of service with Project HOPE in Grenada. Dr. Mark also led a clinical anesthesiology study group on pain control to the Soviet Union and Asia.

GERIATRICS: **Dr. Barry Gurland,** director of the Center of Geriatrics and Gerontology, delivered the keynote address at a recent symposium sponsored by the Adult Day Services Committee of Greater New York.

MANAGEMENT SYSTEMS: **Allen S. Ginsberg,** Ph.D., director, Management Systems and Audit, participated in a seminar on "Successful Admitting Systems" sponsored by the Hospital Management Systems Society of the American Hospital Association and the National Association of Hospital Admitting Managers in Orlando, Florida.

MEDICINE: **Dr. DeWitt S. Goodman,** attending physician at PH and director of the Division of Metabolism and Nutrition at the Medical Center, has been elected a Fellow of the American Association for the Advancement of Science. Upon his election, Dr. Goodman was cited "for contributions to clinical investigation and for leadership roles in the areas of atherosclerosis-cholesterol metabolism and vitamin A-retinoids."

NEUROLOGICAL SURGERY: **Dr. Bennett M. Stein,** director of the Service, served as director, moderator and editor of the Third Annual Stonwin Medical Conference on Subarachnoid Hemorrhage sponsored by the Harry Winston Research Foundation, Inc. Distinguished neurological surgeons from around the globe attended the conference. Program participants from the Medical Center included **Dr. J.P. Mohr,** director of the Stroke Service, **Dr. Sadek Hilal,** director of Neuroradiology, and **Dr. Robert A. Solomon,** chief resident in Neurosurgery.

NURSING: **Mary Patricia Sharkey Kringas,** administrative nurse clinician, was named the recipient of the 1985 Distinguished Alumni Award by Mount Saint Mary College, given annually by the college to a graduate who offers outstanding service to society through career and volunteer work.

ORTHOPEDIC SURGEONS HOLD 59TH ANNUAL ALUMNI MEETING

Dr. Robert E. Carroll, chief of the Division of Hand Surgery, at right, delivered the Second Alan DeForest Smith Memorial Lecture at the 59th annual meeting of the New York Orthopaedic Hospital Alumni Association. Dr. Carroll discussed "The Care and Training of a Hand Surgeon." ■

Also pictured are, Dr. Alexander Garcia, left, and Dr. Frank E. Stinchfield, center, both retired directors of the Orthopedic Surgery Service, and Dr. Harold M. Dick, seated, director of the service.

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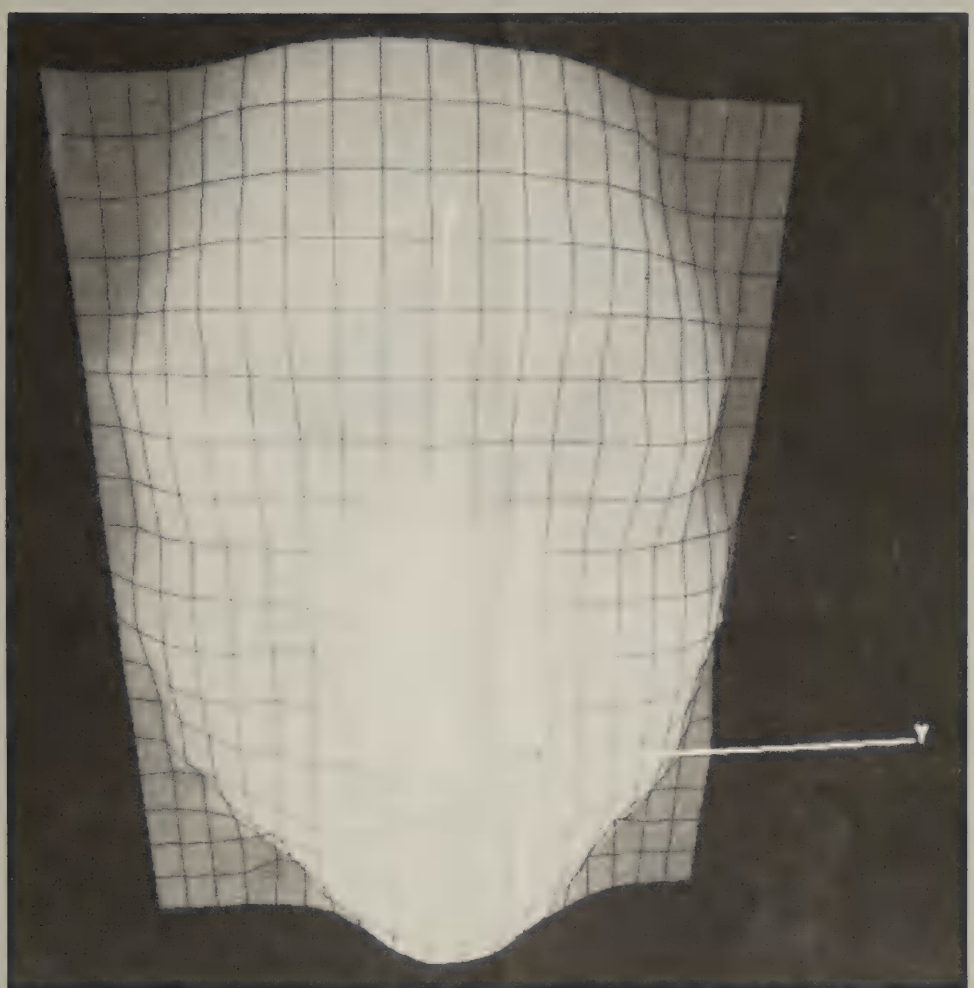

PLASTIC SURGERY: RESTORING QUALITY OF LIFE

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IMPORTANT NOTICE TO OUR READERS

You are invited to participate in The Presbyterian Hospital's Planned Giving Program. By making a gift of an annuity, unitrust life insurance or personal property, you can provide income for yourself (and, if desired, your beneficiary) and obtain both immediate and long-term tax benefits. With your participation in the PH Pooled Income Fund or through the more traditional gift of a bequest, you can have the assurance that PH will be able to meet the challenges of tomorrow. Friends wishing to name PH as beneficiary in their wills should consult their attorneys.

For further information, call or write the Director of Planned Giving, CPMC Fund, Inc., 100 Haven Avenue, New York, New York 10032. (212) 781-2100.

ABOUT THE COVER

Plastic surgeons can do wonders resculpting the human body, but they can't yet "see" the results beforehand. However, an experimental technique under development by Presbyterian Hospital and Columbia University researchers may soon allow surgeons to simulate the effects of plastic surgery.

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PLASTIC SURGERY: A WAY TO RESTORE QUALITY OF LIFE

Dr. Norman Hugo

By Norman Hugo, M.D.

The aging process has been the focus of much attention in recent years. This is due not to media manipulation, hedonism or an outbreak of narcissism. Rather, people are living much longer and consequently, they show signs of aging more prominently and frequently than previous generations. By the year 2025, one in five people will be 65 years of age or older, nearly twice the proportion today.

In our fast-paced, mobile and quick-judging society, character assessment is often based on physical characteristics.

A wrinkled, jowly woman is judged to be formidable and overbearing because jowls bespeak power and our society deems them to be out of place on a woman. Small wonder that she seeks help from a plastic surgeon.

With increased emphasis on fitness, men are seeking similar surgery. What passed for vanity 50 years ago is now becoming commonplace and acceptable. Figures from the American Society of Plastic and Reconstructive Surgeons for 1984 show that of the 54,000 face lifts performed, 10 percent were performed on men.

BY WHOSE STANDARDS IS BEAUTY MEASURED?

The standards of beauty are increasingly occidental and particularly North American. A recent NOVA production, "Frontiers of Plastic Surgery," traced the media explosion which has succeeded in creating such a standard.

Unlike cultures which equate age with sagacity, our culture equates youth with creativity and energy, both of which are highly regarded. This cultural pressure virtually assures that people will attempt to look more youthful — to reverse the aging process.

Plastic surgery — once practiced clandestinely only in private clinics and exclusive European salons — has become a highly accepted and valuable part of the medical armamentarium. This began in 1937 with the founding of the American Board of Plastic Surgery, which has established

continued on next page

These pictures exemplify the results a plastic surgeon can create in face lift surgery.

strict training requirements of five to seven years based on general surgical principles and a rigid examination.

PLASTIC SURGEONS CAN IMPROVE QUALITY OF LIFE FOR PATIENTS

Medicine has evolved from a concern only over life-and-death matters to a greater interest in quality of life. Orthopedic, vascular and plastic surgery are clear examples.

In the past, face lifts originally were confined simply to tightening the skin for fear of injuring the facial nerve which controls expression. Now, the operation returns muscles to their normal anatomical positions and sculpts the jaw and neck by safely removing fat.

Differing life styles have contributed to the aging process. Tanned skin once was identified with the laboring class. Now it is a "de rigeur" status symbol encouraged by the travel and recreation industries. Unfortunately, a tan is accompanied by severe damage to the skin which creates wrinkles and sagging, especially in the face and neck.

Sun screens may not be the panacea the public thinks. While screening out much of the ultraviolet B light, they allow passage of ultraviolet A which penetrates more deeply into the dermis and potentially can cause more aging effects. Ultraviolet A light is being used with more and more frequency in tanning salons. While the absence of ultraviolet B prevents most of the sunburn, the preponderance of ultraviolet A is a serious aging factor.

Weight gain also can cause a person to look older. Youth is associated with leanness and mobility. Aging is associated with obesity — bags under the eyes, jowls, double chin and a sedentary lifestyle.

RESTORING FORM AND FUNCTION TO MAINTAIN FULLNESS OF LIFE

Aging is only one area with which plastic and reconstructive surgeons concern themselves. The common denominator in these cases is quality of life. Whatever the deficiency — be it a cut tendon, a skin cancer, an injured face — plastic surgery endeavors to return the function and the form to as near normal as possible so that patients may lead their lives as fully as possible.

BREAST RECONSTRUCTION HELPS TO RESTORE PATIENT'S SELF-IMAGE

During 1985 alone, an estimated 119,000 women in the United States will develop breast cancer. About half of them will require a mastectomy.

Some women would rather die than face the disfigurement that follows. Others undergo a mastectomy, but their feeling of being mutilated persists, leaving a psychological scar as permanent as the surgical scar.

The anguish can last for years. Eighteen years after an oncologicial surgeon removed a woman's breast because of a malignancy, her words still were tinged with bitterness as she told him, "Look what you did to me."

That kind of response from a patient was common when the treatment of choice for cancer was a radical mastectomy.

In the early 1970s, the advent of a technique known as modified radical surgery, which retains the large chest muscle, set the stage for plastic surgeons to reconstruct a new breast. "Since this development, the difference has been dramatic," says Dr. Frank E. Gump, chief of the Breast Service at The Presbyterian Hospital.

Dr. Norman Hugo shapes a new breast for a mastectomy patient from the woman's own abdominal tissue.

BREAST RECONSTRUCTION HAS LITTLE TO DO WITH "MERE VANITY"

Breast reconstruction has a number of important advantages that go beyond the notion of "mere vanity."

"Reconstruction makes it easier for the surgeon. Also, it gives the patient a sense that she doesn't have to face a lifetime of disfigurement — and this helps to sustain her through this difficult period," explains Dr. Gump, who also is professor of surgery at Columbia University College of Physicians & Surgeons.

Over the last 10 years, plastic surgeons have labored to improve the art of breast reconstruction — with remarkable results, both physical and psychological, for their patients.

In some cases, the reconstruction is performed simultaneously with the mastectomy. Other patients choose to wait several months to a year for reconstruction. There is no time limit which excludes a patient from being reconstructed.

A VARIETY OF RECONSTRUCTIVE PROCEDURES ARE AVAILABLE

Various types of reconstruction are available. Some patients prefer an implant made of synthetic material, such as silicone. Other patients receive a temporary expander device which is gradually filled with saline after surgery, enabling it to stretch the skin and muscle in the chest area, thus paving the way for an implant. A third method involves detaching a flap of skin, muscle and blood vessels from the latissimus dorsi muscle on the back and transferring it to the chest, building a breast mound and placing an implant below.

The fourth method, called the RAM flap, is more complicated. In this technique, plastic surgeons transfer a flap of tissue known as the rectus abdominis musculotaneous flap from the abdomen to the chest wall.

Alice Smith (not her real name), 48, of New York, underwent a RAM flap

continued on next page

breast reconstruction here recently. Days after surgery, she proclaimed: "I feel like myself again. I can face the world with open arms."

Ms. Smith's new breast is exceptionally natural in its texture and contour, for it was created from her own abdominal tissue.

RECONSTRUCTION OFFERS LIFE, NOT JUST SURVIVAL

Like most other women who lose a breast, she became depressed after her mastectomy. "But on the other hand," she notes, "I knew there was hope that I could be reconstructed. That I not only could survive, but that I also could live."

Ms. Smith read about the breast reconstruction program available at Presbyterian, which is one of about six hospitals in the United States to offer the RAM flap.

"I had lived with a scar and a deformity. I didn't feel like a whole person anymore — I had to get back to where I was," says Ms. Smith. Of her new breast, she exclaims, "It's almost perfect."

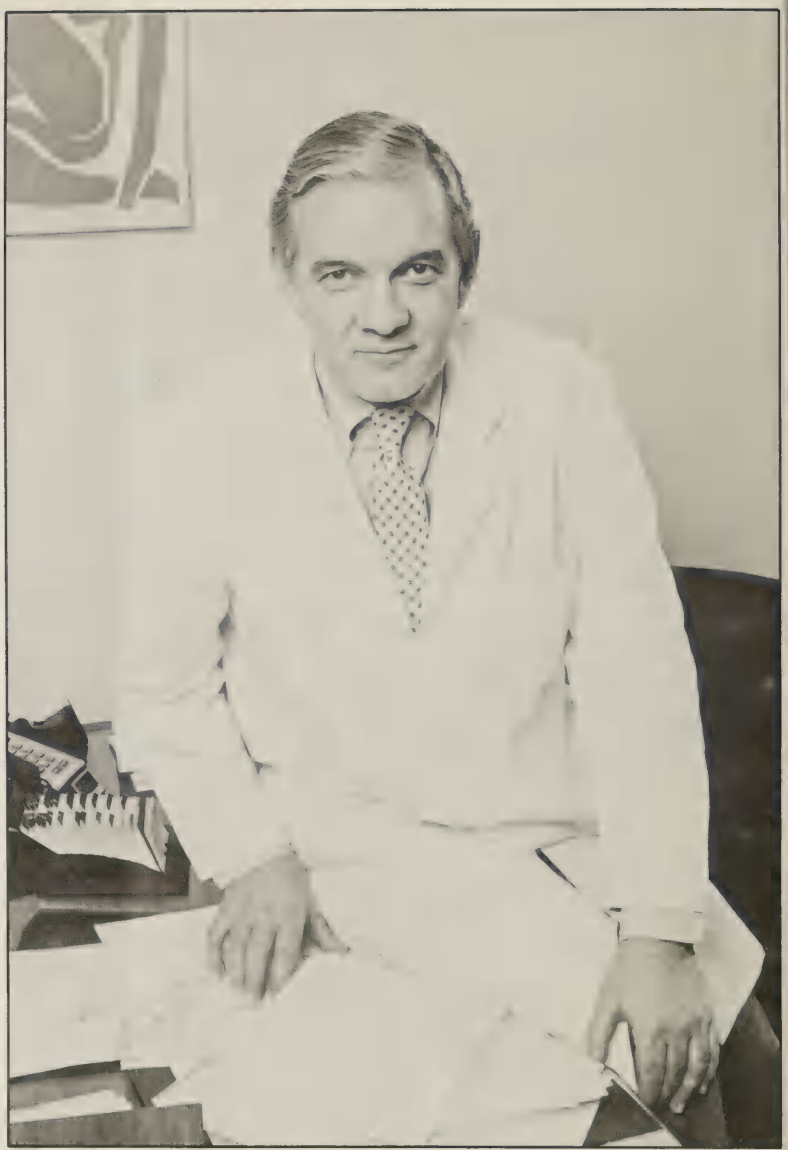
ABDOMINAL TISSUE IS IDEAL FOR TRANSFER TO BREAST AREA

Dr. Norman Hugo, director of the Division of Plastic Surgery here, explains, "The tissue in the abdominal area makes an ideal package for this kind of surgery. The texture of the skin and tissue from this area is the most similar to that of the breast. Also, this flap of muscle and skin comes with its own self-contained blood supply — an artery is imbedded within the muscle."

The RAM flap is the most complicated method of breast reconstruction surgery. As plastic surgeons rotate the segment of tissue up from the abdomen, they must take care not to twist the artery they are shifting. "It's an exacting technique," says Dr. Hugo. "We must preserve the integrity of the blood vessel, so that blood can flow freely to the area. Otherwise, the tissue will die."

Before any incision is made, Dr. Hugo and his team of plastic surgeons first map the area of tissue in the abdomen that is destined for transfer.

"The mapping differs from patient to patient. Preparing for the technique takes a degree of artistry. We look to see how much tissue is available, how it will fit into the chest wall muscle and how it can be manipulated," says Dr. Hugo.



Dr. Sven Kister

PLASTIC SURGEON ADDS ARTISTRY AS HE SHAPES A NEW BREAST

Plastic surgeons then prepare the flap, elevate the tissue, and move it around to fit into the chest. The artistry comes into play as Dr. Hugo shapes the breast so that it matches the other breast as closely as possible.

While Dr. Hugo and his team of surgeons move and mold the flap, they keep a constant check on its blood supply. To do this, they inject a harmless dye called flourescein into the flap and place a special instrument above the tissue. "This gives us a reading of the circulation throughout the area, and enables us to tell whether the flap will thrive in its new environment," explains Dr. Hugo.

This technique, called fluometric computerized monitoring, tells the plastic surgery team the percentage of blood circulation in the area. As the patient recovers, blood flow is fully restored.

STUDY WILL PROVIDE DATA FOR PLASTIC SURGEONS NATIONWIDE

Dr. Hugo, who performs about one RAM flap reconstruction a week, is compiling data for use by plastic surgeons nationwide on the use of this monitoring technique in establishing the minimal blood flow necessary to assure the survival of the tissue.

Once the flap is in place, and as natural-looking as possible, plastic surgeons "sculpt" the breast by trimming off the excess skin and fat and attach the breast permanently.

"Hospitalization after surgery lasts only five days to a week. Within a month, the woman can return to work. If chemotherapy is necessary because of concern about remaining cancer cells, it can be started a few weeks after surgery," says Dr. Hugo.

RECONSTRUCTIVE SURGERY DOESN'T CHANGE THE PATIENT'S PROGNOSIS

"Reconstruction doesn't change the ultimate prognosis. If cancer cells remain, the reconstruction won't affect it one way or the other. Similarly, the need for chemotherapy is no deterrent to reconstruction of any kind," says attending surgeon Dr. Sven J. Kister at PH.

In the past, surgeons such as Dr. Kister shared the fear that reconstruction might hide any recurrence of the cancer.

Dr. Kister, also associate professor of surgery at P & S, explains that the introduction of the modified radical mastectomy has enabled safer and less difficult reconstruction. "Because the RAM flap uses the patient's own tissue, any changes in the tissue would show up on a mammogram, thus alerting the physician to any potential danger," he says.

BEING WITHOUT A BREAST CAN BE STRESSFUL

"Regardless of whether a woman receives an implant or goes on for reconstruction, my feeling is that she should have two breasts — that should be the end result. The plastic surgeons were given a task to solve and they came up with an answer," Dr. Kister adds. "Being without a breast and under continual stress can be very harmful."

The breast reconstruction team works with the Consultation-Liaison Psychiatry Service at PH to evaluate the effectiveness of breast reconstruction — from an emotional standpoint.

Assistant psychiatrist at PH, Dr. Laurie A. Stevens, conducted a follow-up study of women who had reconstruction immediately after breast surgery and those who decided to wait.

"Whether reconstruction is delayed or performed immediately after the mastectomy, it is very helpful in reducing the damaging effects that this kind of surgery can have on womanliness," reports Dr. Stevens, who also serves as assistant professor of clinical psychiatry at P & S.

STUDIES SHOW THAT DEPRESSION OCCURS WHEN THERE IS NO RECONSTRUCTION

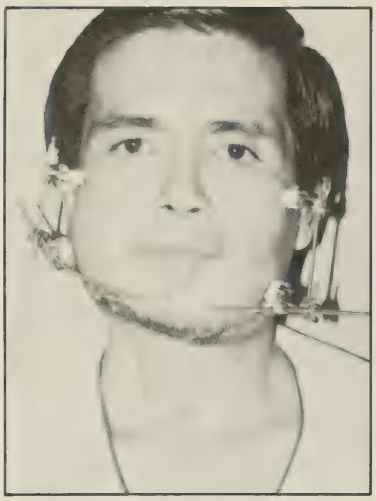
"Some studies have shown a high incidence of depression and low self-esteem in patients who undergo mastectomy without reconstruction," the psychiatrist continues.

"The psychological recovery is extremely important in surgical recovery and in helping the patient get back to the way she functioned before surgery."

In Dr. Hugo's view, "Reconstruction puts an end to the episode of the mastectomy. When reconstruction is not available, the woman is reminded constantly that she had surgery for cancer. Reconstruction enables freedom from these thoughts. Patients who receive a reconstructed breast describe themselves as feeling whole . . . normal. And they have a better self-image."

Dr. Frank Gump reviews a mammograph of a suspected growth in a breast.

RECONSTRUCTING THE FACE AFTER TRAUMA AND CANCER



Abel Lavado, before plastic surgery to repair his crushed lower jaw.

When 60 tons of copper ore toppled into the Peruvian mine shaft where Abel Lavado and a miner were working, Mr. Lavado escaped, but suffered severe injuries that crushed the lower part of his face. Over the last three years, he has been seeking to regain a normal appearance.

Last summer, his company sent him to The Presbyterian Hospital in the hope that plastic surgeons here would be able to make the necessary repairs.

"Fragments of debris were imbedded in his face. It looked as if he had been hit by a shotgun. He had no lower jaw — his jaw receded. He had only three teeth remaining," says Dr. Ivo P. Janecka, associate attending plastic surgeon.

Dr. Janecka removed one of Mr. Lavado's ribs and from this, created a portion of his mandible.

"This was an unusual reconstructive case, from a technical as well as a biological standpoint. He had only a small amount of his own bone remaining in his mouth from which we could reconstruct his jaw. Also, a good deal of copper ore remained in his tissue, and the whole area was compromised because of previous infection."

After surgery, the fixator that held Mr. Lavado's jaw in place allowed him to open and close his mouth, and enabled doctors to care for the soft tissue in his mouth and jaw.

DOCTORS AND PATIENT AGREE: SURVIVAL WAS A "MIRACLE"

Mr. Lavado returned to Presbyterian this past summer for further restoration of his mouth and teeth. His remaining teeth were reinforced to hold a device that was designed specially for him at Columbia University's School of Dental and Oral Surgery, also part of Columbia-Presbyterian Medical Center.

Both Mr. Lavado and his doctors agree that it's a miracle that he survived the accident:

"I never lost hope. But when the bone became infected and didn't heal, the doctors advised me to go to New York to The Presbyterian Hospital.

"My pain has stopped since the surgery here. Before that, I only could eat with a tube. Now, I can chew and I feel happy that I will be reunited with my family. I feel healthy."

PATIENT'S FACE LOOKED ABNORMAL BEFORE RECONSTRUCTIVE SURGERY

Both Mr. Lavado and Dr. Janecka are pleased with his appearance after facial reconstruction. "He looked abnormal when he walked into my office last year," says Dr. Janecka. "Now he is quite presentable." In two years, Mr. Lavado will return here for work on his chin.

Unusual trauma cases, such as Mr. Lavado's or that of a young man who accidentally swallowed a bottle of lye, often end up here. More commonly, patients need reconstructive surgery after suffering auto accidents or the removal of cancerous tissue.

Both trauma and cancer can result in destruction of the delicate facial nerve that runs across the face. When this happens, the patient experiences paralysis of half of his face.

MICROSURGICAL TECHNIQUE ENABLES TRANSFER OF NERVE SEGMENTS

Dr. Janecka uses a microsurgical technique by which he removes a nerve segment from another part of the body and transfers it to the face. Using fine sutures, some of them thinner than a human hair, he replaces the damaged nerve, providing a pathway through which the regenerated nerve can grow.

"This transferred strand serves as a conduit which permits nerve filaments leading from the brain to grow to the affected muscle," says Dr. Janecka. "The nerve grows slowly. In several months, the improvement is apparent."

CANCER IS MAJOR CONCERN OF THE PLASTIC SURGEON

Many cancer patients seek out the help of a plastic surgeon. A middle-aged woman who had received a form of radiation during her teen years for acne developed nasal cancer. Dr. Francis C. Symonds, associate attending plastic surgeon, was able to reconstruct her nose using skin and cartilage from the ear to replace the entire lower end of the nose.

Dr. Symonds is engaged in clinical research on malignant melanoma, a cancer arising in moles. His series of studies is one of the largest in the country. "The data, to be published shortly, will help in the management of all of these patients," says Dr. Norman Hugo, director of the Division of Plastic and Reconstructive Surgery.

When cancer invades the bony structure around the eye called the orbit, plastic surgeons first reconstruct the framework of bone. Then, using soft tissue which has been removed from another area, they rebuild the area, at-

Recovered from his operation, Abel Lavado enjoys the Hospital garden.

tempting to re-establish the original symmetry.

This is feasible due to an application of CT and computer technology employed in pediatric plastic surgery. (See story on page 10-11).

Vascular tumors of the head and neck can deform both the face and the underlying structures. These tumors, composed of blood vessels, resemble a cluster of spaghetti. Because so many blood vessels are involved, treatment is difficult. Working with radiologists such as Dr. Sadek Hilal, director of Neuroradiology, these tumors can be embolized — a process by which blood vessels are sealed by shooting pellets into them under X-ray guidance. That way, they are reduced to smaller, less bloody tumors and can be removed more safely.

ADVANCED DIAGNOSIS AND TREATMENT HELPS RESTORE PATIENT'S IMAGE

Trauma and cancer can wreak havoc with a patient's appearance. When appropriate, plastic surgeons at Presbyterian use the latest methods of skin grafting, myocutaneous flaps and craniofacial techniques to restore appearance.

"Quality of life translates into freedom for the individual," says Dr. Hugo. "This is what plastic surgery is all about."

Dr. Ivo Janecka holds a device he used to rebuild Abel Lavado's jaw. This device has joints which the plastic surgeon can adapt to the contours of the face.

PEDIATRIC PLASTIC SURGEONS RESTORE INFANTS' NORMAL APPEARANCE

Dr. Michael Stalnecker reassures Cynthia LeCruise the evening before her 3-month-old daughter Nana is scheduled to undergo surgery for a cleft lip.

The infant appeared normal at birth, but as he neared two months of age, his head became increasingly elongated. The top of his forehead bulged and the eyes opened more widely than normal. The diagnosis: Crouzon's syndrome, in which the seams between the growing plates of bone that form the skull, called the sutures, close prematurely, allowing no room for the growing skull to expand normally.

The child's parents were referred to neurological and plastic surgeons who recommended surgery to enable the brain to grow and to correct the abnormal appearance of the skull and facial structure.

"If this disorder is severe and goes untreated, it can cause blindness and brain damage," says Dr. Michael C. Stalnecker, chief of Pediatric Plastic Surgery at The Presbyterian Hospital.

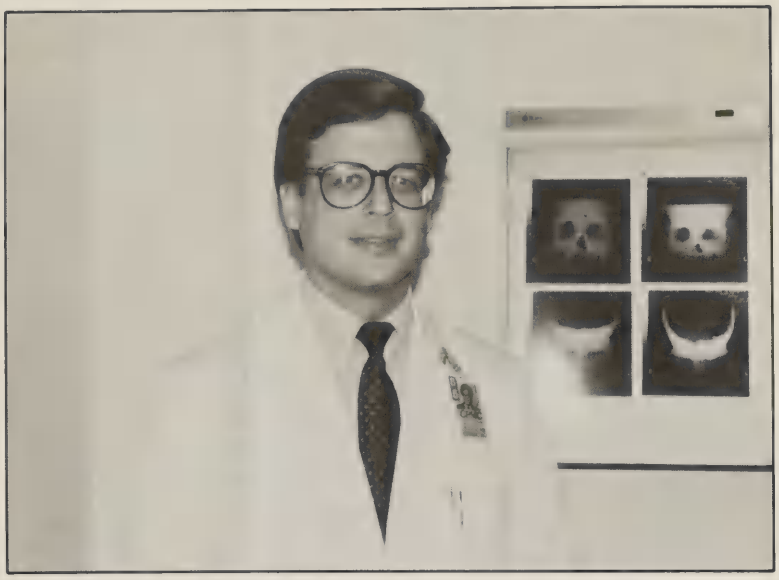
To correct the condition, neurological surgeons first remove a portion of bone from the skull and cut out the deformity. Plastic surgeons then work to give the bones a more normal configuration. Using small power saws, they cut away the bones surrounding the eye and move them forward. When necessary, they reconstruct the orbit, using bone that was removed from the skull.

"When we put it back together, it's like working a jigsaw puzzle. In adults, bone is rigid, but in children, the bones are pliable and grow rapidly. Surgery can open pathways to encourage normal growth," says Dr. Stalnecker.

The suture points are similar to an expansion joint between two plates of bone, but as the joint expands, new bone forms at the edges of the bony plates. Normally, the suture points are loose in early infancy, Dr. Stalnecker explains. "These plates of bone keep growing until the child reaches late adolescence or when the growth of the skull stops."

The most rapid period of brain growth occurs in the first year of life. When the sutures close too early, the brain pushes the flexible young bone upward or outward. The extent of the deformity depends on how many of the skull's sutures are affected.

"Most people view plastic surgery as primarily cosmetic, but in children most of it is done to correct deformities due to congenital defects or disfiguring accidents," says Dr. Stalnecker. "It is important for a face to look normal. If a deformity is severe enough, the patient can't function normally in society."



Dr. Michael Stalnecker

While such conditions as Crouzon's syndrome are rare, it's not unusual for plastic surgeons to see children who were born with cleft lips and palates.

"Refinements of surgical technique developed by plastic surgeons in the last 20 or 30 years give the majority of patients a face and voice that most people would consider normal," says Dr. Stalnecker.

A cleft palate is a gap in the roof of the mouth which can extend up through the gum. The muscles in the soft palate at the back of the mouth are necessary to speak properly. As a person talks, the soft palate presses against the back of the throat to help produce the proper sounds. Children with cleft palates speak with a highly nasal tone because the palate cannot prevent air from going into the nose during speech.

Just as important as surgical technique is the care offered by a team of specialists who can recognize and treat these patients' numerous problems. These specialists include speech pathologists, audiologists, pediatricians, ear-nose-throat physicians, dentists, geneticists, nurses, psychiatrists and social workers, notes Dr. Stalnecker, who heads the cleft lip and palate team at PH.

"The team approach has been one of the most important advances in cleft palate care in the last 50 years."

PHOTOGRAPHIC TECHNIQUE SHOWS RESULTS BEFORE PLASTIC SURGERY

A moire photograph, from which a computer-generated image of the face is formed (see photos at right).

Just how a person will look after plastic surgery can't be predicted until well after the fact.

However, the Division of Plastic and Reconstructive Surgery at The Presbyterian Hospital is working with the School of Engineering and Applied Sciences at Columbia University to devise a technique that will give both the patient and the plastic surgeon an opportunity to predict results before a date is set for surgery.

"We're on the verge of being able to simulate surgery on a person before we actually operate," says Dr. Norman Hugo, director of the division. "Multiple variations of surgery could be done in advance that will enable us to achieve the best result."

Key to this technique is the use of a computer and an interactive television screen. "We want to take a photographic image — say, a face — and, through special photography and computers, project a three-dimensional image on an interactive TV screen. The computer will give each part of the photograph a numerical value and then store this data in its memory," says Dr. Hugo, who also serves as professor of surgery at P & S.

The surgeon will take a moire photograph of the area of the body to be corrected. (Moire photography is used by cartographers in making topographical maps that show the elevations and natural features of terrain.) This is done by shining a grid on the patient and analyzing the way the lines of the grid bend with surface projections such as the nose, and indentations such as dimples and eyes.

This photograph can be digitized and a computer taught to read it and reproduce it in 3-D on a TV screen. This screen is "interactive," just like the one used by many weathermen on television. The meteorologist can circle clouds with an electronic pen. Similarly, the surgeon can use an electronic pen to plan his operation on the 3-D image — the patient.

"This principle is based upon a theory used by an aeronautics manufacturer in making fighter planes. Engineers converted all of the information into numbers and, on a computer screen, moved a plane's wings up and down or made them shorter or longer — to see what configurations would produce the best result," explains Dr. Hugo.

"There are myriad ways of making incisions for all the kinds of surgery we perform — from cleft lip repair and

facial reconstruction to breast and scar reconstructions. Right now, we approach it from a sense of judgment."

Before an incision is made, the plastic surgeon must anticipate the amount and the elasticity of the tissue in the area designated for reconstruction.

"There is an infinite number of possibilities in sculpting the tissue, especially in breast reconstruction," says Dr. Hugo. "We not only want to restore function to the area, but we want the patient to look good.

"In order to fulfill this great promise, we need an enormous data bank on tissue elasticity, tension, twisting, rebound and information on other properties of different tissues in different locations in different people," he explains. "None of this is now available. It will be many years before this becomes a reality, but the capability to do this is on the horizon."

Dr. Hugo is an investigator on a grant from the National Institutes of Health and is collecting data. He is working on this project with co-principal investigators Dr. Melvin Moss, professor of anatomy at Columbia University's College of Physicians & Surgeons, and Professor Richard Skalak, director of the Bioengineering Institute at Columbia.

"This effort represents a marriage of three disciplines — bioengineering, anatomy and medicine. We are supplying the clinical questions and the direction in which we'd like to go, and the engineers and anatomists are providing the technical expertise."

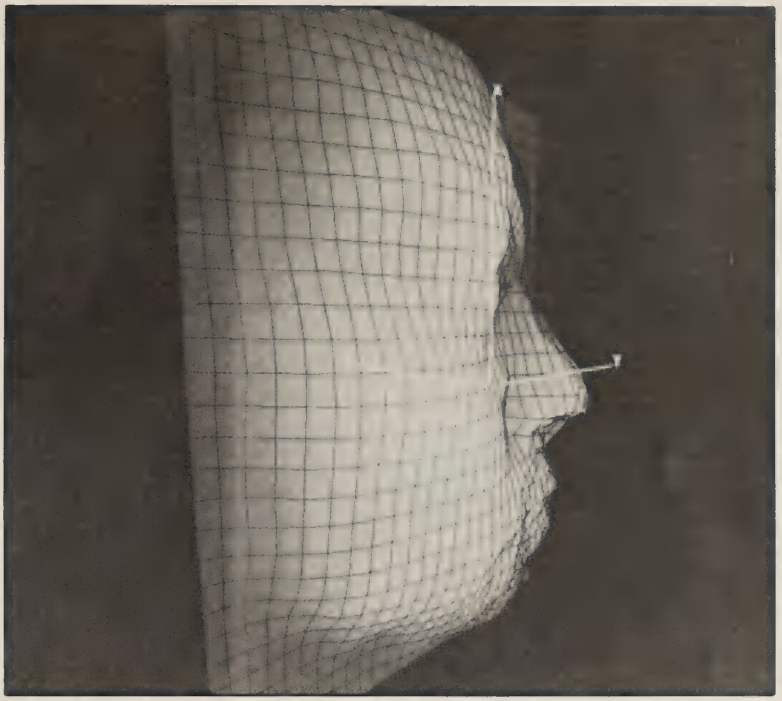
PEDIATRIC PLASTIC SURGEONS WILL APPLY COMPUTER TECHNIQUES

The use of computers and three-dimensional imaging also is being applied to pediatric plastic surgery.

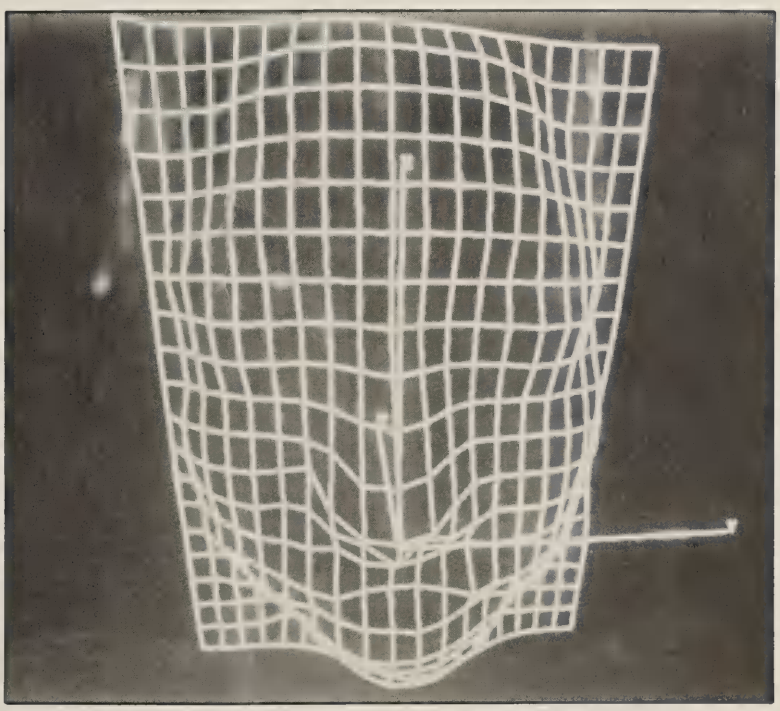
Dr. Michael C. Stalnecker, assistant attending plastic surgeon, is working with CT scans and computers to predict how the bony structure of a child's face will appear after surgery to correct a congenital deformity.

"After taking slice-by-slice pictures of the area with a CT scanner, we will be able to make precise measurements and determine the depth of the structures involved — such as the orbital area around the eye — as well as any subtle contour shapes," says Dr. Stalnecker.

"We hope this will improve our results. Also, because we are studying facial growth in children, we will be able to evaluate the growth of the bony structure before and after surgery."



Using these computer-generated images of the face, surgeons may soon be able to simulate the results of plastic surgery.



CPMC LAUNCHES $245 MILLION CAMPAIGN TO REVITALIZE THE MEDICAL CENTER

Officials of Columbia-Presbyterian Medical Center have announced a $245 million fundraising campaign to take place over the next five years. The funds will be used by The Presbyterian Hospital and the Columbia University College of Physicians & Surgeons to revitalize the medical center.

The announcement was made October 3 during a Hudson River cruise on the charter yacht Empress. Nearly 200 guests toasted the success of the campaign during a fireworks finale.

Presbyterian will use $110 million to help finance a $497 million construction and renovation program designed to help alleviate a severe shortage of hospital services in upper Manhattan.

During the past 15 years, all five other hospitals in upper Manhattan closed, leaving Presbyterian the only health care provider for more than 180,000 people.

PRESBYTERIAN WILL CONSTRUCT TWO NEW BUILDINGS

The Hospital received approval from the State of New York in May 1984 to construct a new 745-bed hospital building on the medical center site and a new 300-bed community hospital at the tip of northern Manhattan. Existing hospital facilities will be renovated, retaining a total of 440 beds. When the new buildings are completed in 1989, Presbyterian will have 1,485 beds at two sites.

Columbia's Health Sciences Division will use $135 million to strengthen its teaching and research activities. Endowments for 28 new senior professorships and 29 new junior faculty positions will be created. Student aid endowments will be increased. Renovation of laboratory and teaching space will take place in virtually every department.

In announcing the goal, campaign chairman Robert H.B. Baldwin, former chairman of Morgan Stanley and Company, said that although the campaign goal is expressed in millions of dollars, "the real goal is the relief of human illness and suffering. When we succeed, we will have the satisfaction of knowing that we have sponsored what is without question the worthiest of human endeavors."

Top: During the cruise, Mr. Howard L. Clark (right), chairman of the PH Board of Trustees, discusses the modernization program with Mr. and Mrs. Stephen Halsey of the American Express Foundation. Bottom: Mr. Robert H.B. Baldwin, chairman of the campaign for CPMC, toasts its success.

THREE NEW EXECUTIVE VICE PRESIDENTS NAMED

Dr. Thomas Q. Morris, president of The Presbyterian Hospital, has announced the appointment of Joseph P. Corcoran as executive vice president for operations and chief operating officer. In his new position, Mr. Corcoran will have responsibility for the Finance, Human Resources and Operations divisions of the Hospital.

Since 1980, Mr. Corcoran has served as vice president for Finance. A graduate of St. Peter's College who holds an M.B.A. from Pace University, he began his career at Presbyterian in 1968 as assistant controller. From 1971 to 1980 he was chief financial officer at St. Vincent's Hospital in New York.

In addition, Dr. Gerald E. Thomson, chairman of medicine of Harlem Hospital, has been named executive vice president for professional affairs. He will have responsibility for both medical affairs and nursing.

Dr. Thomson, who also serves as Samuel Lambert Professor of Medicine in the College of Physicians and Surgeons, has authored numerous publications with particular emphasis on problems of renal function and hypertension. He also has addressed questions regarding the distribution of health care, the needs of the medically underserved, and issues concerned with public general hospitals.

The third new executive vice president is David L. Ginsberg, former director of the Office of Planning. Mr. Ginsberg, executive vice president for planning and program development, was the driving force behind the long range planning process and the modernization program of The Presbyterian Hospital. He will devote all of his efforts to planning and program development at PH. In particular, he will be involved in new ventures. He also will assist in the interaction of the Hospital with community and government agencies and will be responsible for marketing new programs of the institution. ■

FOOTNOTES

ADMINISTRATION: **Denise Reed,** executive director of the Ambulatory Care Network Corporation, has been appointed a member of the American Hospital Association's Council on Management.

MEDICINE: **Dr. Robert Lewy,** director of Employee Health, served as moderator of a panel on Corporate Drug Testing Programs during a conference addressing "Substance Abuse in Corporate America," sponsored by the New York Business Group on Health, Inc.

Dr. I Bernard Weinstein has been selected to receive the Medical Alumni Citation from the Wisconsin Medical Alumni Association. This award, the highest honor bestowed by the association, is being presented to Dr. Weinstein for his "outstanding professional and scholarly accomplishments."

PSYCHIATRY: **Dr. Letty Pogul,** chief of Psychology of the Pediatric Psychiatry Outpatient Clinic, has been awarded the Diplomate in Clinical Psychology by the American Board of Professional Psychology. ■

VISITING RUSSIAN CARDIOLOGIST ADDRESSES CPMC PHYSICIANS

Dr. Lilia F. Nikalayeva, chief of the Department of Rehabilitation at the U.S.S.R. Cardiology Research Center, recently addressed the New York Chapter of the Physicians for Social Responsibility at Columbia-Presbyterian Medical Center. Her topic was "Russian and American Physicians Working to Prevent Nuclear War — A Russian Cardiologist's Perspective."

Physicians for Social Responsibility is a non-profit organization committed to public and professional education on the medical hazards of nuclear weapons and nuclear war. ■

From left are: Dr. Donald F. Tapley, Dr. Nikalayeva, Dr. Thomas Bigger, and Dr. Anne Bauer.

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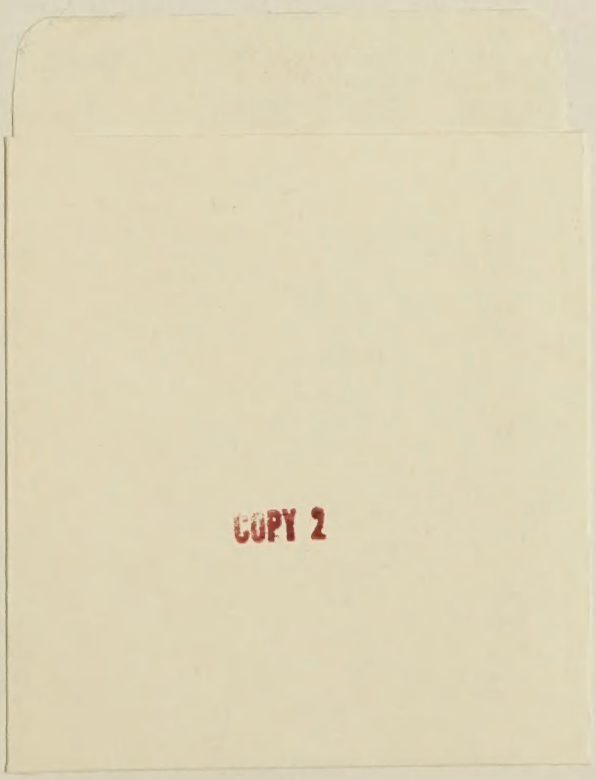
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